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THE ACTION OF DRUGS IN MUSCULAR FATIGUE*

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Evidence that the sympathetic system plays a part in muscular contraction was first found by Orbeli in 1923. He stimulated the motor roots in the frog repeatedly and recorded the contraction of the gastrocnemius. As the stimulation proceeded the height of the contraction diminished, and he then stimulated the sympathetic fibres in addition; in the majority of the experiments he observed an increase in the height of the contraction. Several workers have since confirmed Orbeli's observations in the frog, but few clear results have been obtained in warm-blooded animals. The relation of the sympathetic supply to the motor innervation has been studied in the sea-gull and the pigeon, but without general agreement on the significance of the results. In 1930 Miss Baetjer made observations in the cat in which she showed quite clearly that the effect described by Orbeli could be obtained in that species. Her results were of two kinds: in some experiments stimulation of the sympathetic led to an augmentation of the muscle contraction, and in others it diminished the muscle contraction; this diminution she attributed to the diminution of blood-flow through the muscle caused by vasoconstriction. The augmentation of contraction by sympathetic stimulation was observed when the muscle was fatigued; the evidence indicated that it was accompanied by a diminution of blood-flow and occurred in spite of it; Miss Baetjer's paper did not, however, establish this.

The observations which Dr. Edith Bülbring and I have made arose out of an attempt to discover the function of vasodilator fibres in the sympathetic supply of the muscles of the dog. We were led to study the effect of sympathetic stimulation in the contracting muscles. The experiments performed have been of different kinds. Those which offer least ambiguity in interpretation were experiments in which defibrinated blood was pumped through the hind leg of a dog, the pressure in the arterial cannula being recorded by a manometer; the outflow from the vein was measured by Gaddum's outflow recorder. Since the skin was removed from the leg the tissue perfused was almost entirely muscle. The spinal cord was exposed and the last three lumbar and first two sacral roots were separated from the cord; the dorsal roots were cut away as far as the ganglion, and the motor roots thus prepared for stimulation. The sympathetic chain was also prepared for stimulation. By fixing a steel rod through the lower end of the femur and connecting the tendo Achillis to a tension lever the tension developed by the gastrocnemius muscle during an isometric contraction was recorded.

Changes of Blood-flow in Muscle Contraction

The preparation has made it possible to investigate afresh the changes of blood-flow during muscle contraction. With a normal degree of vascular tone and a contraction exceeding five seconds in duration there is a large fall of arterial resistance and a corresponding increase in venous outflow during the contraction, whether this is a tetanus or whether it occurs in response to interrupted stimulation. For those of us who are accustomed to thinking of blood-pressure changes as brought about mainly by nervous impulses, particularly impulses passing along sympathetic fibres, the extent of the vasodilatation caused by muscular contraction is very surprising. If the muscle is stimulated by way of the motor roots in the anaesthetized animal there is no fall in the general blood pressure despite the vasodilatation; this must mean that a large volume of blood is deviated from the skin or intestines to the muscles in order that the fall may be prevented. The redistribution of blood is accomplished by the sympathetic system, and in animals from which this system has been removed exercise is followed by a conspicuous fall in blood pressure. Thus we see that exercise not only involves increased formation of energy in the body but provides a valuable gymnastic exercise for the blood vessels.

When a record has been kept of the tension developed by the perfused gastrocnemius we have observed an initial contraction corresponding in some experiments to as much as 18 kg.; this tension then declined, and was maintained at a level which depended on the blood-flow through the muscle. When the stroke of the pump was increased so that more blood was driven through, the venous outflow rising from 100 to 140 c.cm. per minute, the tension rose by 0.75 kg., and fell again when the original blood-flow was restored. Thus, as might be expected, the tension varies in proportion to the blood-flow.

The Orbeli Phenomenon

When, during the course of a tetanus produced by stimulation of the motor roots, the sympathetic chain was also stimulated, after a short latent period the tension in the gastrocnemius rose and was maintained at a higher level until the sympathetic stimulation stopped. As a result of the tetanus the inflow of blood was greater and the outflow from the vein was also greater, but during the

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stimulation of the sympathetic chain the flow of blood through the muscle was reduced below the original level. Thus the rise in tension occurred in spite of a reduction in the blood-flow. By experiments of this kind it was possible to confirm Baetjer's results showing that the phenomenon described by Orbeli could be observed in mammals, and to demonstrate in addition that it occurred even when the blood-flow was diminished. That the smaller blood-flow was a hindrance to the rise of tension is evident from the presence of a second rise of tension as the vasoconstriction passed off. Evidently the first rise was the resultant of two effects, both produced by the stimulation, the one raising the tension and the other diminishing it by reducing the blood-flow.

Similar effects were obtained by the injection of adrenaline. When doses of adrenaline corresponding to 7 γ and 20 γ were injected into the arterial cannula during a tetanus there was a diminished blood-flow, but nevertheless an increase of muscle tension of 1 kg. and 2 kg. respectively. When larger doses—for example, 100 γ—were injected the vasoconstriction was then so great that the tension was reduced.

In other experiments the motor roots were given stimuli repeated at a rate of 110 per minute. When some degree of fatigue was evident from the gradual diminution of the tension developed at each contraction the sympathetic chain was stimulated for thirty seconds, with the result that the tension was increased by about 1 kg. When, later, 20 γ of adrenaline was injected there was a rise of tension of about 2 kg.

The Action of Cocaine

Some interesting observations have been made with cocaine. It has long been known that the Peruvian Indians are accustomed to perform feats of endurance by the aid of coca leaves, which they chew. Since the identification of cocaine as the active principle there has been some confusion about the action of cocaine in muscular contraction, and it remains till now undecided whether the effect exerted in the Indians was an action on the central nervous system or whether it was a peripheral action on the muscle itself. Recently Macgregor, in my laboratory, has investigated the action of cocaine on the muscle of the cat, and has shown that when stimuli are applied to the sciatic nerve the intra-arterial injection of cocaine causes a diminution in the tension developed. Dr. Bülbring and I have found, however, that when a rapid rate of stimulation is maintained the initial drop in tension after the injection of cocaine is followed by a striking and prolonged rise in tension to twice the initial value. We made experiments in cats in which the brain was destroyed and also carried out perfusion experiments in which the inflow of blood was determined by the stroke of the pump and the arterial resistance. The injection of 2 mg. of cocaine hydrochloride into the blood going to the leg, after causing an initial drop in tension which passed off in thirty seconds, then produced a rise in tension from 4 to 5 kg. This increased tension persisted for several minutes. The injection of cocaine was practically without effect on the blood-flow through the muscles of the leg; there was a very slight diminution.

These observations seem to us to provide a demonstration of the basis of the action of cocaine in increasing endurance and lessening fatigue, and suggest that it is unnecessary to postulate an action on the central nervous system as playing any part. We think this action of cocaine can be regarded as a further evidence that it is a sympathomimetic substance.

The Action of Ephedrine

It has been known for some time that ephedrine has an action on skeletal muscle inasmuch as it has a beneficial effect in myasthenia gravis. The discovery was apparently made by a lady who suffered both from this disease and from asthma, and who found that in taking ephedrine for asthma the myasthenia gravis improved as well. When ephedrine is injected into a cat in which the brain has been destroyed, in which the tension of the gastrocnemius is recorded, and in which the sciatic nerve is repeatedly stimulated so that fatigue has been produced, a large and prolonged rise of tension is observed. Now the injection of the ephedrine was also attended by a rise of blood pressure due both to increased cardiac output and to vasoconstriction; it can scarcely be doubted that there was an increased blood-flow through the muscle, and that the increased tension was in part at least due to this effect. In the period from fifteen to sixty minutes after the injection there was no appreciable change in the blood pressure, yet the muscle tension increased from 4.5 to 4.8 kg., so that vascular changes did not account for the whole effect. This was proved by experiments in which the muscles were perfused by means of a pump and in which the only vascular effect produced by the ephedrine was a very slight diminution of blood-flow through the muscle. When the sciatic nerve was continuously stimulated 110 times a minute until fatigue lessened the tension developed in the gastrocnemius, the injection of 1 mg. ephedrine hydrochloride then produced a rise in tension similar to that produced by 1 γ adrenaline, but lasting very much longer; the tension was increased by about 60 per cent.

Now Gaddum has put forward the view that many of the actions of ephedrine are to be explained by supposing that it diminishes the rate of removal of adrenaline. We were therefore concerned to discover what effect ephedrine exerted in the contracting muscle on the response to adrenaline. We found that whereas 4 γ adrenaline raised the tension from 4.5 to 5.5 kg., after the injection of 2 mg. ephedrine it caused a rise from 4.5 to 7 kg.

We think there can be little doubt that in these effects of ephedrine—both in the effect it exerts directly and also in the effect on the adrenaline response—we have the physiological basis of the use of ephedrine in myasthenia gravis.

Other Sympathomimetic Substances

In addition to ephedrine we have tested three other sympathomimetic substances—namely, dihydroxyphenylethylamine, sympatol (or synephrine), and tyramine—and have found all of them active in raising the tension. The first has the same ring-structure as adrenaline, but without the –OH and the $-CH_3$ groups in the side-chain. Sympatol has the same side-chain as adrenaline, but only one –OH group in the ring in the *para* position. Finally, tyramine has a ring like sympatol and a side-chain like dihydroxyphenylethylamine.

Actually tyramine (base) was found about twice as potent in its direct effect on muscle tension as ephedrine hydrochloride, which might suggest that it was a better agent for the treatment of myasthenia gravis; tyramine has, however, little or no augmentor action on the adrenaline response. It would be interesting to know how tyramine compares with ephedrine in treatment; for if tyramine is better, then clearly the direct action is the more important, whereas if ephedrine is better, then the augmentation of the adrenaline effect is the more important.

The action of racemic sympatol, or synephrine, was found much more like that of adrenaline in onset and duration, but 1,000 times weaker. In dihydroxyphenylethylamine we met a much more potent substance, for in a series of experiments we found consistently that it was only one-hundred-fold weaker than adrenaline in raising muscle tension, and in action it was more prolonged. Since the pressor action of this substance is not greater than that of tyramine, it should be more suitable for use in treatment than any of the other sympathomimetic amines. It is unfortunately not easy to obtain; our own sample was given to us by the late Professor Barger. Table I contains a summary of the relations

TABLE I

Substance	Potency in Raising Tension compared with Adrenaline	Whether Action is Prolonged	Whether Effect of Adrenaline is Increased
Dihydroxyphenylethylamine	100 times weaker	Yes	No
Racemic sympatol or synephrine	1,000 „ „	No	No
Tyramine ..	1,000 „ „	Yes	No
Ephedrine ..	2,000 „ „	Yes	Yes

of the different substances; from this it is seen that ephedrine is the only substance which augments the action of adrenaline, and that sympatol, which has the same side-chain as adrenaline, is the only substance which has a brief action like that of adrenaline: the others exert a more prolonged action.

Histamine

Lastly I would like to mention that one or two observations indicate that histamine diminishes the muscle tension; this effect has not yet been fully investigated by us, but we have seen that it does not always occur. We believe that in those circumstances in which there is little fatigue when adrenaline fails to increase the tension, then histamine does not diminish it; on the other hand, when there is fatigue, so that adrenaline augments the tension, then an injection of histamine causes a fall of tension.

Effect of Adrenaline on Motor Roots

There has been for many years a controversy on the relation of the sympathetic nervous system to skeletal muscle. Boeke, the well-known Dutch histologist, believes that he has observed sympathetic fibres which end in striated muscle in places where the blood vessels are absent, and so he supposes that there is a direct sympathetic innervation of skeletal muscle fibres. On the basis of Orbeli's experiment in the frog and of similar observations in the cat and in the dog, we could suppose that the function of these fibres was to increase the force of muscular contraction in fatigue. The existence of such a mechanism would certainly be appropriate. When muscular work begins the sympathetic is engaged in redistributing the blood, so that the skin and intestines get less and the muscles more; when muscular work is severe the sympathetic system must at all costs maintain a high blood pressure in order to preserve a sufficient coronary flow; if necessary blood must be cut off from the skeletal muscles for this purpose. To compensate for this, however, we can suppose that the Orbeli mechanism comes into play by the aid of the fibres which Boeke thinks he has demonstrated.

We have seen, however, that the action of adrenaline injected into the blood stream is similar to that of sympathetic stimulation, and since this adrenaline must diffuse from the blood into the muscle substance it is likely that the sympathetic fibres in the blood-vessel walls would anyhow exert a similar effect; for when they are stimulated and cause vasoconstriction they liberate a humoral transmitter similar to adrenaline that diffuses into the muscle substance. Thus a direct sympathetic innervation of muscle fibres need not exist in order to account for what is observed.

What kind of an action do adrenaline and the other sympathomimetic substances exert on the muscle whereby the tension in fatigue is augmented? Since it is exerted by adrenaline after giving ergotoxine, and by other substances when there is only the smallest change in the blood-flow, we do not see how the action can be due to a vascular effect. In attempting to put forward any positive suggestion we are obliged to describe some observations we have made on the transmission of impulses travelling along the motor nerves from the roots. Often in the course of our experiments we had observed that the response to stimulation of the roots became steadily less, and finally disappeared, and we looked upon this as the inevitable failure of vital function in the artificial conditions of a perfusion system. We have discovered, however, that the contractile response of the muscle can be restored by the addition of adrenaline to the perfusing blood.

For example, we performed experiments in which a stimulus lasting ten seconds was applied to the motor roots at intervals of two minutes. At the beginning of the experiment the initial tension developed was 10 kg., at a time when the perfusing pressure was 100 mm. The tone rapidly fell, and the tension which was developed during successive stimulations fell also to 1 kg. Adrenaline was slowly added to the reservoir collecting blood after reoxygenation, and the vascular tone rose; when a total of 100 γ was added to 600 c.cm. blood the tension developed in response to stimulation was restored to 10 kg. In each experiment it was possible to watch the diminution or disappearance of the response to motor-root stimulation and its restoration by the addition of adrenaline many times. To cause a disappearance of the response it was not necessary to apply a stimulus lasting ten seconds in order to fatigue the muscle; the response to single shocks also disappeared. The effect of the adrenaline on the muscular response always lagged far behind its effect on the vascular tone—for example, 100 γ adrenaline was added to the blood during ten minutes, and when the highest arterial pressure was reached of 90 mm., stimulation of the motor roots still produced no response. The arterial pressure then fell as the adrenaline was destroyed, and when it was only 40 mm. stimulation of the motor roots produced a tension of 12 kg.

We found this effect of adrenaline on the response to motor-root stimulation difficult to explain; it seemed as though by the action of adrenaline a store of some substance was created either in the muscle or in the blood, the presence of which was necessary for the response to motor-root stimulation. We therefore investigated the effect of adding different substances to the blood. We found that the steady addition of sodium lactate did not restore the response; nor did the addition of dextrose, of dextrose and insulin, or of extract of suprarenal cortex (eucortone). We found, however, that the disappearance of the response to stimulation of the motor roots was not accompanied by any change in the response to direct stimulation of the muscle itself. This made it appear that the failure of the response could have nothing to do

with conditions in the muscle or in the blood, but rather with conditions at the neuromuscular junction.

In the hope of excluding the effect of the vascular changes produced by adrenaline we gave ergotoxine first. We found that adrenaline then failed to restore the response. This led us to the provisional conclusion that the effect of adrenaline must be, in spite of all appearances, in some way or other vascular.

Adrenaline and the Orbeli Phenomenon

The first question to be discussed is whether the ability of adrenaline to restore the response of the motor roots to single shocks is related to the Orbeli phenomenon. Previously we imagined that the Orbeli phenomenon—that is to say, the increase of tension observed on stimulation of the sympathetic chain during a tetanus or during interrupted stimulation—was due to an effect on the metabolism of the muscle, whereby as a result of the action of the adrenaline-like humoral transmitter more energy was made available and the response to a constant stimulus became greater. If, however, the Orbeli phenomenon is related to the ability of adrenaline to restore the response of the muscle to single shocks, it is clear that it has nothing to do with the metabolism of the muscle, since the failure of the motor roots to cause contraction is not accompanied by any failure of the muscle to respond to direct stimulation. The failure of single shocks applied to the motor roots to cause contraction must be due to a failure of the nerve ending to transmit the impulse to the muscle, and somehow or other adrenaline must restore the transmission when it has failed. If the Orbeli phenomenon has the same explanation, then the rise of tension on stimulation of the sympathetic fibres is to be explained as due to improved transmission of the motor impulses at the nerve ending.

In one respect only do the observations hitherto made indicate that the two phenomena have a different explanation—namely, in respect of the action of ergotoxine. After giving ergotoxine, adrenaline is able to cause an increase in tension during the application of interrupted stimulation. Hitherto, however, after giving ergotoxine we have failed to observe a restoration of the response to stimulation of the motor roots when adrenaline is added to the circulating blood. This difference suggests at first sight that the two phenomena are unrelated. This may well be so, but we do not yet give up hope of finding an explanation which will harmonize the difference.

In conclusion we would like to call attention to the practical significance of the finding that, in a perfusion system, stimuli applied to the motor roots may cease to be transmitted to the muscle, and that the transmission can be restored by the addition of adrenaline to the blood. We have here evidence that the conditions of the circulation can modify the transmission of impulses to the skeletal muscles.

This evidence may be a clue to the muscular weakness which is found in Addison's disease or in shock, when the blood pressure becomes very low; there may be in both these conditions a partial failure of neuromuscular transmission, and the evidence indicates the great importance of maintaining the blood pressure in order to combat this failure. So far as Addison's disease is concerned the recent evidence of Secker fits in very well. He has shown that, in a cat from which the suprarenal glands have been removed, repeated stimulation of the cervical sympathetic chain results in a condition in which the nictitating membrane no longer responds to the stimulation. Injection of cortical extract rapidly restores the response. Here is evidence that the body requires a certain concentration of the cortical hormone to enable some sympathetic nerves to function properly. If this is true of the vasoconstrictor fibres we have at once an explanation of the low blood pressure seen in Addison's disease. When the cortical hormone is deficient the sympathetic impulses cannot maintain the vascular tone. Our own evidence now carries the pathology still further. Because of the low blood pressure and poor circulation we can expect a deficient transmission of motor impulses at the neuromuscular junction, and in consequence great muscular weakness.

A similar sequence of events may occur in shock, where, as we know, there is a large fall in blood pressure with accompanying muscular weakness. Perhaps the observation that histamine can reduce muscle tension has a bearing on the explanation of shock; if so, the view that histamine is a cause of shock may be revived in a different form.

Summary

When the gastocnemius muscle of a dog is caused to contract by stimulation of the motor roots the tension developed during a tetanus or during interrupted stimulation lasting some minutes is augmented either by stimulation of the sympathetic chain or by injection of adrenaline.

Cocaine, which causes an initial drop in muscle tension during nerve stimulation, also causes a rise in tension afterwards; this is probably the basis of the action of cocaine in increasing endurance.

Ephedrine augments the tension developed by the muscle, and also augments the tension-raising power of adrenaline; this is probably the basis of the action of ephedrine in myasthenia gravis. Tyramine is twice as strong as ephedrine, and dihydroxyphenylethylamine is twenty times as strong as ephedrine. These substances should be tried in myasthenia gravis.

It has been demonstrated that when stimulation of the motor roots fails to evoke a muscular response the neuromuscular transmission can be restored by adrenaline. The evidence that circulatory conditions may affect neuromuscular transmission may explain the muscular weakness of Addison's disease.

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The following is the programme of the provincial meeting of the Tuberculosis Association to be held at Cambridge from March 30 to April 1: Thursday, March 30, 2.30 p.m., Professor Sebrechts (Bruges), "Apicolysis with Plombage by the Pectoral Muscles in the Surgical Treatment of Giant Cavities: The Technique and the Results at Bruges from 1926 to 1938"; 4.30 p.m., Problem cases presented by Drs. E. T. W. Starkie, T. W. Davies, and A. Brownlee. Friday, March 31, 9.45 a.m., Mr. N. R. Barrett, "Tuberculosis of the Thoracic Wall"; 11.15 a.m., Dr. F. R. G. Heaf, "How Far should the State Consider the Individual in Planning a Tuberculosis Scheme?"; 2.30 p.m., visits; 7 p.m., president's reception; 7.30 p.m., annual dinner. Saturday, April 1, 9.45 a.m., Dr. Brian Thompson and Mr. E. S. Evans, "Tuberculous Cervical Adenitis"; 11 a.m., Mr. R. Scott Stevenson, "Radiology of the Larynx"; 12 noon, annual general meeting. Further particulars can be obtained from the honorary secretary of the association, 26, Portland Place, W.1.

THE THREE-PHASE MODIFIED BENDIEN REACTION

BY

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For many years clinicians have felt the urgent need for some simple but reliable laboratory test for the presence of active malignant disease. In other fields of medicine there has been very noticeable improvement in the results of treatment, this in many cases being due to the diagnosis of the morbid condition at an early stage which had not previously been possible, but which, with the introduction and recognition of some specific test, was placed upon a rational and scientific basis. This unfortunately has not been the case with malignant disease, and it must be admitted that a really satisfactory diagnostic laboratory method has yet to be elaborated to aid and supplement the experience of the skilled clinical observer. It is true that many have attempted to demonstrate changes in the blood of cancerous patients, and, from minor non-specific alterations from the normal, numerous tests have been evolved, accompanied by extravagant claims as to their value in diagnosis. There has, however, been a deplorable absence of confirmation of the results obtained with the several tests in the hands of all save the originators, whose enthusiasm may at times have gained the upper hand of their judgment.

One aid to diagnosis which has perhaps enjoyed a longer period of popularity than others has been the Bendien vanadic acid serum test. There is little doubt that in its original form it was merely a method of demonstrating the increase of serum protein which may occur with active progressive malignant disease. Boyland (1932a) concluded that it was based upon certain non-specific changes in serum that could also be demonstrated in other morbid states besides active cancer. The spectrographic examination which was performed in the original Bendien test has also been shown to be valueless (Smith *et al.*, 1931 ; Groeneveldt and Kromme, 1931), and it has long since ceased to be used.

Cronin Lowe (1933a, 1933b, 1934) introduced a modified form of the Bendien test for which he claimed great accuracy in diagnosis. This was his so-called "three-phase test"; in principle it consists of the quantitative comparison of the amounts of flocculation produced in a given specimen of serum which had been treated with a standard solution of vanadic acid, and the amount of flocculation obtained with the same standard after the serum had been subjected to ether extraction (Phase C) and also to heat inactivation at 56° C. for half an hour (Phase B). The originator of this test maintained that if the increase of flocculation produced in Phase C (as compared with the flocculation in the original untreated serum) was greater than the decrease of flocculation found in Phase B, then active malignancy was present in the individual from whom the specimen of blood was obtained. In other words, the quantitative estimation of the flocculated material gave, therefore, a fraction $\frac{C-A}{A-B}$, which when greater than unity was said to be pathognomonic of active cancer. It was also claimed that a specimen of blood from a person in normal health or suffering from some benign disease would, with the three-phase test, yield a fraction less than unity. In the series of cases reported here the interpretation of the fraction was recorded as indefinite in a number of specimens where the difference between the denominator and numerator of the fraction was less than three times the maximum error of the process used.

The claims made for this three-phase test were so great that if this work could be confirmed a most valuable weapon had been forged for the fight against cancer, and in view of the results of Jones and Woodhouse (1936), who obtained agreement of 75 per cent. between serological and clinical findings, it was decided to investigate a series of cases with this particular test. Practically all the 427 specimens examined in my series were obtained without any knowledge of the clinical condition of the patient at the time of performing the test, and it was only some days later, after the result of the test had been obtained, that details were available as to the diagnosis and treatment of the case. In this series, therefore, the test was performed with true impartiality, and the interpretation of the clinical state of the patient at the time of collecting the specimen of blood was entirely the work of another observer, whose notes were made at that time. The technique described by Cronin Lowe (1933a) was closely followed as regards the performance of the test itself ; the only modification was in the method of estimating the amount of flocculation produced by the action of the vanadic acid standards upon the various specimens of serum. This modification, together with the results of a number of experiments on the mechanism of the test, is described below.

A small preliminary series of forty-seven specimens of serum were examined with the three-phase test, a nephelometer being used to estimate the amount of flocculation. This is Series A (Table I).

TABLE I.—*Results in Series A (47 Specimens)*

Disease	No. Examined	Positive	Negative	Indefinite
Active malignant . .	21	8 (38%)	12 (57%)	1 (5%)
Non-malignant . .	26	7 (27%)	19 (73%)	—

It will be seen that there was agreement between the results of the three-phase test and the clinical findings in twenty-seven specimens examined (58 per cent.), and in nineteen cases (40 per cent.) the result of the serum test was incorrect.

Following upon this a series of 398 specimens of serum were examined with the three-phase test, a photo-electric absorptiometer being used for all estimations. This is Series B (Table II).

TABLE II.—*Results in Series B (398 Specimens)*

Disease	No. Examined	Positive	Negative	Indefinite
Group 1 : Active malignant . .	143	55%	37%	8%
Group 2 : Inactive malignant (clinical cures)	138	37%	57%	6%
Group 3 : Non-malignant . .	99	42%	53%	5%
Group 4 : Hodgkin's disease and leukaemia	18	50%	50%	—

Distribution of Positive and Negative Results

In the two series, therefore, 445 specimens of serum were examined. Owing to the controversial nature of the morbid process in the cases in Group 4, these were excluded when calculating the figures given below. The total number of specimens analysed is therefore reduced

to 427. A positive result was obtained with 185 specimens of serum. Of these, an active malignant process was present in ninety-four cases (51 per cent.). A negative result was obtained in 215 specimens: a non-malignant lesion was present in 148 of these (69 per cent.). An indefinite result was obtained with the other twenty-seven specimens of serum examined.

From the examination of this series of 427 specimens of serum tested the fact therefore emerges that there was agreement between serological results and the clinical picture in only 55.5 per cent. of them. For purposes of comparison the results obtained by other workers using this three-phase test are given in Table III.

TABLE III

	No. of Specimens	Percentage of Agreement
Cronin Lowe (1933a)	600 (about)	95
Allott (1933)	13	69
Patterson and Adler (1933)	59	60
Jones and Woodhouse (1936)	450	75
Nielsen (1936)	550	81.5
Oliver (1937)	276	56
Price (present series)	427	55.5

The majority of the specimens examined in Series B fall into four large groups—namely, rodent ulcer, epithelioma (of various sites), carcinoma of the breast, and non-malignant diseases. These are now considered as separate groups (Table IV).

TABLE IV.—*Principal Groups occurring in Series B*

	No. Examined	Positive	Negative	Indefinite
Group I (Rodent ulcer, 75):				
Active	15	7 (47%)	8 (53%)	—
Inactive*	60	20 (33%)	37 (62%)	3 (5%)
Group II (Epithelioma, various sites, 98):				
Active	54	29 (54%)	22 (41%)	3 (5%)
Inactive*	44	15 (34%)	26 (59%)	3 (7%)
Group III (Carcinoma of breast, 66):				
Active	43	26 (60%)	14 (32%)	3 (8%)
Inactive*	23	12 (52%)	10 (43%)	1 (5%)
Group IV (Non-malignant diseases)	99	42 (42%)	52 (53%)	5 (5%)

* Inactive = clinical cures.

On consideration of the figures given above the following points emerge.

(*a*) The most favourable results were obtained in Group III (carcinoma of the breast), where in active cases 60 per cent. of the specimens tested gave a positive result with the three-phase test. When the total number of cases of active malignant disease is considered, amounting to 143 specimens of blood examined, this figure drops to 55 per cent.

(*b*) On examination of Group IV (non-malignant diseases), 42 per cent. of the specimens still yielded a positive result with the test. This is only 18 per cent. less than was found in Group III, where the most favourable results were produced.

(*c*) In the group of 138 specimens from cases of malignant disease that had been treated (Table II) and where no clinical activity of the neoplastic process could be demonstrated, the positive results obtained amounted to 37 per cent. It must be admitted that among the cases in this group there must be quite a number in which there would be some recurrence of activity of the growth within a short period, and in which there was probably symptomless activity even at the time when the blood specimen was obtained. Therefore it would be expected that in this particular group a higher percentage of positive results would be obtained than in the non-malignant category. This, however, was not the case.

(*d*) On examination of the whole series from the point of view of sex it was found that of the positive group of results, 52 per cent. of the samples of blood were from female patients and 48 per cent. from males. In the group of specimens which yielded a negative result with the three-phase test, 49 per cent. of the sera were derived from females and 51 per cent. from males. In comparing these figures with those showing the association of active malignancy with a positive result of the three-phase test, it will be seen that the female sex is associated in slightly greater proportion with a positive result than is active malignant disease (52 per cent. to 51 per cent.). Since the sex of the patient was entirely a random factor and quite unselected, these figures suggest that the association of an active malignant process with a positive result to the three-phase test was also a matter of chance.

(*e*) It is true that over the total series of 427 specimens negativity of the three-phase test is to a higher degree associated with non-malignant conditions. (This was, in fact, nearly 70 per cent.) It must, however, be noted also that a greater proportion of negative results was obtained over the whole series examined (50 per cent. negative to 43 per cent. positive), and also that out of the total number of 427 specimens of serum tested, 263 (61 per cent.) were from cases of non-malignant disease (or clinically cured malignant conditions). The result of this would be a somewhat greater possibility for a negative result of the test to be associated with some innocent lesion.

The cases were also analysed from the point of view of the age of the patients from whom the blood specimens were taken. Here it was found that over the fourth to seventh decades, into which categories the majority of the cases fall, the proportion of negative results of the tests tends to equal that of positive results. In other words, there is a one in two chance that a specimen of serum can give a positive result with the test (or a negative result, excluding the small number of indefinite results). The figures in the following table suggest that the larger the number of specimens examined the nearer to equality will be the number of positive and negative results obtained.

TABLE V

Age	Positive	Indefinite	Negative	Total
0—10	1 (33%)	—	2 (67%)	3
11—20	8 (73%)	—	3 (27%)	11
21—30	5 (25%)	4	11 (55%)	20
31—40	15 (56%)	1	11 (41%)	27
41—50	32 (47%	4	33 (48%)	69
51—60	41 (44%)	10	43 (46%)	94
61—70	43 (50%)	4	39 (45%)	86
71—80	19 (32%)	5	35 (59%)	59
81—90	1 (20%)	—	4 (80%)	5

The Test in Prognosis

In fifty-eight cases it was possible to obtain specimens of blood for examination on two or more occasions. In only eighteen (31 per cent.) of these was the test of any prognostic value. In a number of the patients examined it was found that several results might agree with the clinical condition and progress of treatment, and then be followed by a result that was obviously and entirely incorrect. In a number of the cases examined it was noticed that the tube in which "initial flocculation"

occurred would move to the left (that is, "initial flocculation" would take place with a more dilute vanadic acid standard) as the patient's state deteriorated. This is due to the increase of serum proteins which is usually but not invariably associated with active progressive malignancy, and is by no means specific for that condition.

A number of cases were also followed up for a period of six months after the last blood test had been performed. Information was available concerning twenty-six cases classed as "clinical cures." These patients had all been tested with the three-phase reaction, and had yielded uniformly positive results. Of these twenty-six cases, twenty-five (96 per cent.) had shown no recurrence of any activity, and in one there had actually been great improvement in the general clinical condition. During the time these cases were under observation not one had shown evidence of renewed activity. During this same period twenty-eight cases of active malignant disease were also investigated; these people had all given negative results with the three-phase test. Of the twenty-eight cases twenty had shown definite recurrence of malignant activity (71 per cent.); of these, nine patients had died directly as a result of malignant disease. Seven cases had actually shown improvement in the clinical condition (25 per cent.). One had remained stationary, with no obvious clinical change. In addition, thirty-three cases from the non-malignant group were also examined over the same period. These patients had all given positive results with the three-phase test. Not one of them had shown the development of any malignant process so far as could be determined by clinical examination. With regard to the group of "clinical cures" it was also noted that those cases giving a negative or non-malignant result with the three-phase test showed a higher incidence of recurrence of activity than did those cases from the same group which yielded a positive result.

Mechanism of the Three-phase Test

This initial flocculation is defined by the originator of the test as the first tube in which there appears, after standing for twenty-four hours, a deposit of 1 to 2 mm. of precipitated material produced by the interaction of the serum and vanadic acid standards. It can easily be shown that this phenomenon is closely connected with the serum colloids. In a protein-free filtrate prepared from serum no such flocculation can be demonstrated even on the addition of the most concentrated of the vanadic acid standards (No. 30). Again, in the case of cerebrospinal fluid, which contains the serum crystalloids in roughly the same concentration as occurs in serum (except of course the chlorides), but in which there is only a very small amount of colloidal material, no flocculation can be produced.

Boyland (1932b) has shown that the position and amount of flocculation produced with a given serum could be quantitatively modified by the addition of small amounts of globulin. He has also shown that the albumin/globulin ratio influences the amount of flocculation that may occur. These points were confirmed by several simple experiments. Boyland concludes that the amount of flocculation produced is governed by three factors: (1) the albumin/globulin ratio, (2) the total amount of protein present, and (3) the alkali reserve of the serum. In connexion with this third point it was found by experiment that the process of ether extraction (Phase C of the test) of a serum was accompanied by an alteration of the *p*H of that serum, which became more acid. Adjustment of the reaction of a specimen of serum *in vitro* by the addition of dilute mineral acid was also found to be associated with an increase in the amount of flocculation produced in that serum, even though it was not subjected to ether extraction. Examination of specimens of serum which had been subjected to heat inactivation revealed that the reaction had become more alkaline, this being accompanied by a decrease in the amount of flocculation produced by the addition of any given vanadic acid standard (Phase B). This decrease of flocculation could also be produced by the alteration of the *p*H of the serum by the addition of weak alkali.

It was thought that the serum cholesterol might play some part in determining the actual amount of flocculation that was produced with any specimen of serum. In 398 samples of serum, therefore, in addition to performing the three-phase test, the level of the serum cholesterol was also estimated. It was not found possible to demonstrate any quantitative relation between the value obtained for the serum cholesterol and (*a*) the amount and position of the "initial flocculation," (*b*) the amount of flocculation in Phase B, and (*c*) the amount of flocculation in Phase C. One small point was, however, noted with regard to the serum lipoids. With a specimen of serum it was found possible to produce a curve (amount of flocculation plotted against time) showing the inactivation process which occurs during the period of heating at 56° C. A similar phenomenon could be demonstrated with a solution of serum proteins in normal saline. When, however, the proteins were rendered lipoid-free by washing thoroughly with ether, after separation and drying of the protein, the process of inactivation (as shown by decreased flocculation) could not be reproduced in a solution made from this material. It appears, therefore, that the serum lipoids are necessary for the production of inactivation by heat of a serum, as shown by this method, but further investigation did not disclose evidence of any quantitative relation between the amount of cholesterol present and the degree of flocculation of any serum with a given vanadic acid standard.

These results suggest that the alterations that occur in Phases B and C of the three-phase test are partly due to changes produced in the reaction of the serum when it is subjected to heat inactivation (Phase B) or to ether extraction (Phase C). Mere alteration of the *p*H of the serum, however, would not reproduce the range of alteration of the amount of flocculation produced by the two processes described—that is, Phases B and C—and it seems possible that the serum lipoids may be partly responsible, or that some qualitative change occurs in the serum colloids themselves. It should, however, be pointed out that the basic processes of the three-phase test do not serve as an index of any particular property of blood serum or serve to measure any specific constituent. The test as such is therefore entirely empirical. It can also be shown with many specimens of serum that if the result of the test is based upon the A, B, and C phases corresponding to the "tube of initial flocculation," a totally different result may be obtained by estimating the result on either the set of three tubes to the left or right of the point where "initial flocculation" occurs.

Technique

The method of performing the three-phase test is well described by Cronin Lowe (1933a). His technique was carefully followed, except in the actual method of quantitative estimation of the amount of the flocculated material produced in the test. The apparatus used for this purpose

was originally a Zeiss interferometer, an instrument of great precision, but very costly and of little value in routine pathological work. For reasons of economy, therefore, a Leitz nephelometer was chosen for estimating the flocculation produced in the test. Forty-seven specimens (Series A) were examined in this way, but control experiments with this instrument showed a large visual error, especially when estimating a depth of fluid greater than 12 mm. The nephelometric method of estimation was in consequence discarded, and a Hilger "Spekker" photo-electric absorptiometer was used for all the other estimations (Series B). This instrument was chosen for the following reasons: (1) its initial cost is relatively low, and it is capable of performing any type of colorimetric analysis; (2) there is no visual matching of colour fields, so that personal error is minimized; (3) its intrinsic error is low (± 1.25 per cent.); (4) over the range of turbidities examined the absorption curves of serum albumin and serum globulin are practically linear, as are also the curves of mixtures of these substances; and (5) the absorption curve of cholesterol was also found to be linear from zero to 500 mg. per 100 c.cm., and this instrument was successfully used for some 500 cholesterol estimations performed upon the present series of specimens: for this analysis the method described by Kamlet (1934) was employed, the error for this process being found to be ± 5 per cent.

The method that was used for the preparation of turbid fluids from the flocculated material obtained in the three-phase test is now given in detail. The technique described by Cronin Lowe (1933a) was religiously followed as far as the stage of estimation. The set of three tubes (one from each phase) showing an initial flocculation in Phase A (untreated serum) were centrifuged at 2,000 r.p.m. for five minutes. The supernatant fluid was aspirated with a fine suction pipette, and N/80 caustic soda was added up to the 2 c.cm. graduation. The packed deposit was then dissolved by gentle agitation. These tubes were allowed to stand for twenty-four hours, when it was found that the yellow colour due to traces of vanadic acid was almost completely discharged. This was of considerable importance when estimating visually in the Leitz nephelometer. To each tube was added 8 c.cm. of a standard solution containing 20 per cent. of salicyl-sulphonic acid and 20 per cent. of glucose. This mixture was slowly inverted three times to mix and allowed to stand for ten minutes; in the case of the Series A specimens these opaque fluids were estimated visually in the nephelometer against a standard glass turbidity wedge set at a depth of 10 mm.

In the case of the specimens in Series B the opaque fluids were estimated in the absorptiometer against a water standard set at 1.000. In each case the results were obtained in the scale units of the instrument used for the estimation, but since only relative units were necessary to compare Phases A, B, and C, it was not deemed of importance to convert these scale units into some absolute units such as grammes or milligrammes. The maximum error found in control experiments with the absorptiometer was ± 2.55 per cent., and there was the added advantage that distilled water could be used as the standard for comparison, being a colourless fluid.

Summary

Over a series of 427 specimens of blood examined with the three-phase modified Bendien test there was agreement of serological results with clinical findings in 55.5 per cent.

Evidence suggests that the larger the number of cases or specimens which are tested, the nearer to equality becomes the proportion of positive and negative results. In other words, the association of active malignancy with a positive result is a matter of chance.

Consequent upon this, and supported by subsequent history, the test is of no value whatever either in the diagnosis of malignant disease or in the control of treatment or prognosis in that condition. The test, in my hands, has shown itself to be entirely unreliable.

There is no quantitative relation between a positive result of the three-phase test on a sample of serum and the level of the cholesterol in that particular specimen. Neither was it possible to demonstrate any connexion between the serum cholesterol figure and the amount of flocculation in Phases B and C of the three-phase test.

A brief description is also included of some experiments performed regarding the mechanism of the three-phase test. Two separate methods of estimation of the amount of flocculation occurring in the test are also briefly discussed, together with the main reasons for their adoption.

My thanks are due to Dr. A. L. Taylor and Professor T. B. Davie for their invaluable advice and criticism; and to Dr. E. Cronin Lowe for permission to visit his laboratory at Liverpool, where the three-phase test was ably demonstrated. The majority of the bloods examined were derived from the cases of the combined radiological department of the Bristol Royal Infirmary and Bristol General Hospital, for which kindness, and the privilege of access to their records, I must record my great appreciation.

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In view of the large and rapidly increasing amount of work on endocrinology it has been decided to establish a journal devoted to this subject called the *Journal of Endocrinology*. This periodical will be issued quarterly, and will publish communications "which advance knowledge concerning the internally secreting glands, the mode of their actions, the nature of their secretions, and the disorders of their functions." A committee formed for the promotion of the new journal has appointed Professor E. C. Dodds as editor, and Dr. R. L. Noble as assistant editor. An editorial board has been formed consisting of Dr. P. M. F. Bishop, Professor C. R. Harington, Dr. A. S. Parkes, Dr. F. G. Young, and Dr. S. Zuckerman. Papers intended for publication should be submitted to the Editors of the *Journal of Endocrinology*, Courtauld Institute of Biochemistry, Middlesex Hospital, Mortimer Street, London, W.1. The subscription rate for each volume of four issues will be 30s., and should be paid direct to the publishers of the new journal, the Oxford University Press, Amen House, Warwick Square, E.C.4.

TRANSFUSION WITH CONSERVED BLOOD

BY

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Despite its many obvious advantages the routine use of stored blood for transfusions has failed to achieve any popularity. Whether this is due to an inherent objection to conserved material where fresh is available or whether to the fact that reactions after its use have been described is debatable. It was thought, however, that an extended trial might be of practical value.

The use of stored blood is by no means new. The work of Rous and Turner (1916) on animal transfusions suggested to Captain Oswald Robertson (1918) the employment of preserved blood for transfusions during the war, and his technique involved the dilution of 500 c.cm. of blood with 800 c.cm. of a citrate dextrose solution. He performed twenty-two transfusions with only one slight reaction, and that in a case of gas gangrene. He kept the blood as long as twenty-six days, with an average of ten to fourteen days, but discarded any that showed signs of haemolysis. In the decade following the war transfusions were comparatively few, but the increase during the last ten years has renewed attention to the possibility of using stored blood.

Figures for East Suffolk and Ipswich Hospital

Year	Blood Transfusions	Year	Blood Transfusions
1929	48	1934	49
1930	35	1935	53
1931	35	1936	137
1932	34	1937	124
1933	35	1938	145

Yudin (1937), working on some experiments done by Shamov (1937), performed 1,000 transfusions with stored cadaver blood with entirely satisfactory results. Fantus and Schirmer (1938) report on the technique used at the "blood bank" of the Cook County Hospital, Chicago. Tuohy (1938), Wilson and Jamieson (1938), and Mingazzini (1938) all record satisfactory results with stored blood. In a personal communication Dr. Reginald Saxton, who has had experience of transfusion work under war conditions in Barcelona and elsewhere, informed me that he had given up using stored blood because of the reactions it produced. However, on reverting to fresh blood equally numerous reactions had been noticed, and it is possible that these were due to the poor physical condition of the donors.

The advantages of stored blood are: (1) blood is available at very short notice; (2) it is typed leisurely and examined to exclude syphilis; (3) it is drawn from the donors at their convenience; (4) it is possible to restock blood taken from "list" donors by that from relatives when they become available; (5) with a choice of time for the withdrawal of blood it becomes possible for the same person to be constantly responsible for the operation.

Apparatus

A desirable technique should ensure the following points: (*a*) the minimum amount of exposure to air and aerial contamination; (*b*) a small needle for the donor's veins which necessitates either previous "heparinization" of the donor or negative pressure to assist the flow; (*c*) samples available for testing without opening the main container. The apparatus has been designed with these objects in view, and consists of a transfusion needle 1.5 mm. in diameter connected by an adapter and about eight inches of pressure-tubing to a chromium-plated two-way screw cap which fits a 20-oz. screw-capped U.G.B. medicinal (Fig. 1).

FIG. 1.—Showing on the left the bottle containing 50 c.cm. of 5 per cent. citrate before use, but attached in readiness to the electric rotary suction pump. On the right is shown the same bottle full of blood and with the aluminium screw cap in position. The label on the second bottle has been filled in with all the essential details, and attached to the bottle are two small tubes, one for serum and the other for a cell suspension.

The exit tube of the cap runs via an air filter of cotton-wool and an adjusting valve to an electric rotary suction pump such as is available in most operating theatres. The accessories consist of an aluminium screw cap to fit the bottle which is wrapped in paper and sterilized, a conical centrifuge tube for serum for Wassermann or other test, and a small tube with about 1 c.cm. of citrate in saline for cross-matching.

Technique

The donor, in a fasting state, is taken to the theatre, where strict aseptic technique is observed. The veins are compressed with a sphygmomanometer cuff, and a small amount of local anaesthetic is injected. About 50 c.cm. of 5 per cent. sodium citrate solution is used as the anti-coagulant, and is drawn into the bottle through the needle and tubing. To ensure a satisfactory flow of blood the needle is inserted unconnected with the tubing. The bottle is agitated gently during withdrawal, and with moderate suction a steady stream of blood fills the bottle in from four to seven minutes. The required amount of blood is then allowed to run into the accessory tubes, the needle removed, caps changed, and tubing washed out with water. A Laughlen flocculation test is done soon after withdrawal, and is confirmed later by Wassermann and Kahn reactions. No positive reaction has so far been obtained with any donor's blood. A cross-matching of the donor's cells and the patient's serum is always performed, and only if this is satisfactory is the blood issued for use.

During the past ten months 150 transfusions have been made with stored blood, and the following figures are worth recording:

Maximum period of storage	14 days
Average " " "	4.4 "
Pints discarded as out of date	8.6%
Number of Group IV (O)	66%
" " II (A)	31%
" " III (B)	3%

The red and white cells of several samples have been frequently examined over a period, and a composite curve is reproduced here (Fig. 2). It shows a rapid decrease of white cells practically confined to the polymorphonuclears and a very gradual diminution of the red cells.

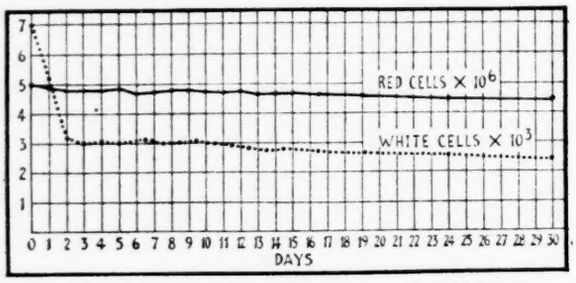

FIG. 2.—Graph showing cell counts on citrated blood.

Donors

Because donors come up when convenient and suffer little or no discomfort we have no difficulty in getting adequate numbers of volunteers; but it is important that they should be treated considerately, and it is a great advantage if withdrawal of blood is done by one person: not only does practice make perfect, but the operator establishes personal contact with his donors.

Of the 150 transfusions sixty-three pints were obtained from relatives and eighty-seven from voluntary donors. We have 152 donors on our list, and could easily increase this if necessary. They receive no payment except travelling expenses when these are requested. At most of the large firms in Ipswich there is a responsible individual to whom we telephone and so arrange appointments.

A Report on Use of Stored Blood

Stored blood is used in the East Suffolk and Ipswich Hospital for all transfusions. For small ones a simple tube-and-funnel method is employed, and it is often possible to avoid cutting down upon a vein by the use of a 1-c.cm. syringe fitted with a side-tapping to which the rubber tube leading from the funnel is attached. When patients require repeated transfusions, or the veins are impalpable, it is necessary to cut down under local anaesthesia. We have found that the glass cannula of the Marriott and Kekwick type is the most convenient, and it gives the least trouble in either intermittent or continuous transfusions. Up to six pints of stored blood have been transfused by the continuous-drip method of Marriott and Kekwick. Some points in the technique of using stored blood are:

1. Agitation of the refrigerated blood is carefully and thoroughly performed by inversion of the bottle and a rocking or swinging motion, but shaking is never done, as it has been shown to cause haemolysis.

2. Warming of the blood is always performed cautiously. If possible it is allowed to stand for a period in the room to reach that temperature gradually, and the bottle is then immersed in warm water at a temperature not exceeding 100° F. The thickness of the glass bottle ensures a slow and safe warming, and the bottle is gently rocked during the procedure. I have seen no ill effects resulting from the warming, and if the blood is to be administered at the rate of a pint in half an hour, as is usual, I consider that it is desirable to raise its temperature towards that of body heat, although there is no necessity for any exact temperature to be reached provided it does not exceed 98° F.

3. The blood is always filtered, using four to six thicknesses of sterile gauze through which it is poured directly from the bottle into the receptacle used for the transfusion. Care is taken to avoid any of the warming water from running down by wrapping a layer of sterile gauze round the neck of the bottle. A useful two-way stopper recently marketed by the Bush Manufacturing Company allows the blood to be given by inverting the bottle and connecting it up directly with a filter and drip connexion.

Complications

We are convinced that complications are no more frequent than with the usual citrate methods of transfusion with fresh blood. Approximately 10 per cent. of patients have developed slight transient rises of temperature, but in one case only did this cause alarm. It is not impossible that this reaction, which came on six hours after the transfusion, was due to some other cause; at any rate, the patient made a good recovery. A few develop rigors, but it is rare to see more than one rigor in any patient, and the incidence is not more than 5 per cent. There has been no case of embolism, pyaemia, haemoglobinuria, haematuria, or suppression of urine. No anaphylactic or delayed serum reactions have occurred.

One patient had eleven blood transfusions with quantities of from six ounces to three pints over a period of less than a month without any ill effects. A man who had sustained multiple injuries in a motor-cycle accident—fractures of the skull, first rib, and clavicle, and metacarpal and minor injuries—was received here three hours later after a twenty-six-mile journey in an ambulance. On admission his symptoms were suggestive of a ruptured spleen. At operation this proved to be the case, and the spleen and three pints of blood were removed from the abdomen. During the operation he received one pint of stored blood, and subsequently another while he was still on the table. He made a good recovery. It is true that this patient might have been given an autotransfusion; but this would have considerably delayed the operating-time, and in view of his other complicating injuries any delay would probably have meant death upon the operating-table.

We are well satisfied that stored citrated blood produces no more complications than does fresh citrated blood, and the advantages of the former cannot be exaggerated.

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The report for 1937 on Native Affairs in Kenya Colony and Protectorate (H.M. Stationery Office, 3s.) includes an interesting chapter on medical and public health matters. Smallpox was imported into one district by refugees from Ethiopia, but thanks to the comprehensive precautions taken no widespread epidemic resulted. Only 158 cases of plague were reported, as compared with 239 in the previous year, and there was an even larger drop in the incidence of cerebrospinal meningitis (227 cases against 319). The number of cases of syphilis (4,837) and yaws (13,131) treated at the dispensaries was much the same as in the preceding years. In some districts, however, yaws appears to be practically extinct, and it is rare now to see typical ulcerative yaws in, for example, Nairobi. Again, there is reason to believe that the intensity of helminthic infestation is decreasing, though the number of cases actually coming under treatment is still about 60,000. Much has been achieved by propaganda and educational endeavour, but much remains to be done. Thus in the Keruguya area female circumcision is still so commonly performed that episiotomy is necessary in 90 per cent. of first labours.

RECURRING INTRACARDIAC CLOTTING

ITS ASSOCIATION WITH ACUTE BRONCHIAL ASTHMA

BY

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So little is known of the cause of sudden failure in a damaged heart that the striking features in this case prompt me to record it.

Past History of Case

The patient was a primipara, aged 23, without illness or known infection of any kind until the age of 16, when she had her first attack of acute bronchial asthma following a "chill." Attacks increased in frequency and severity, except during a recent pregnancy. Two and a half years ago a severe attack, typically asthmatic at its inception, rapidly developed into a heart crisis lasting twenty-four hours, when her life was despaired of. Her doctor said that her recovery was wholly unexpected and was almost as sudden as the onset; further, that the most interesting and puzzling feature of this sudden apyrexial illness was that she developed very definite rough valvular murmurs which cleared up in a short time. Soon afterwards she acted upon the suggestion that married life might cure her asthma, and the attacks actually did become less frequent and severe for a time, ceasing altogether during pregnancy. She felt perfectly fit throughout, and apparently had a normal but lengthy labour, lasting twenty-four hours, which resulted in the birth of a healthy live child weighing 8 lb. Thereafter, however, the old attacks recurred with renewed severity.

With great difficulty, and only after most searching questioning of her husband, was it possible, after her death, to elicit a definite history of failing heart, although neither he nor the patient herself had had any suspicion that her symptoms were due to an abnormal heart. Since her confinement she had had occasional stitches, with pain under the heart, attacks of palpitation, and an increasing distaste for effort. She had to "go easy," and often had to sit down and blow out her cheeks. Latterly she was nearly always tired, and for the last two months found stair-climbing almost impossible.

Recent History

One morning she had an attack of acute bronchial asthma. Her doctor gave her an injection, which eased her sufficiently to enable her to undertake a journey of twenty-five miles without undue discomfort. Throughout that day she was quite bright, took her meals, walked around a little, but felt tired. She had a very restless night, due to a return of distress in her breathing.

I saw her the next morning. She was sitting up in bed in the favourite position, leaning forward with arms on knees, wheezing like a typical asthmatic, her face pale and distressed, her lips slightly cyanosed, her pulse rapid and of poor tension. Cardiac dullness was obliterated, there was hyperresonance over both lung areas, inspiration was feeble and expiration prolonged, with the normal characteristics of both obliterated by sibilant and sonorous rales. A hypodermic injection of ephedrine and adrenaline eased the breathing almost immediately. Later in the day the wheezing returned, and a further similar injection with omnopon was given, following which she slept restlessly most of the afternoon. She apparently was dazed and confused on waking, and cried out in her disturbed sleep. These symptoms were put down to the effect of omnopon and exhaustion. She appeared to be very ill in the evening, but her father said that he had seen her worse, that she would be all right in the morning, and that there was no need to send for the doctor. At 9 p.m. she was able to sit up in bed and take a little supper. Later, according to her husband, some froth appeared at the corners of her mouth, and only then did she say that she felt very ill. Still later the husband was suddenly wakened by a queer gurgling choking noise. The patient looked as if dying; her face was blue, she was gasping for breath, and was wildly throwing her arms about and struggling to get out of bed, saying, "It's wind." She was got back to bed in a convulsed state, with her arms and legs bent and stiff. Her breathing ceased almost immediately.

Post-mortem Findings

Lungs.—The pleurae were normal, while the pleural sacs contained no free fluid. The left lung was frothy and emphysematous throughout. The upper two lobes of the right lung showed a condition similar to that of the left, but the lowest lobe was dark, firm, and hard, and on section was like a recent blood-clot. There was much gelatinous mucus in the larger bronchi and lower trachea.

Heart.—No evidence of pericarditis was seen, but there was an excess of free fluid in the pericardial sac. The heart was pale, flabby, enlarged, and full of ante- and post-mortem clots. Ante-mortem clots were present in both chambers of the right heart; they were non-globular, fleshy, tough, and rope-like. That in the ventricle stretched the whole length of the main stem of the pulmonary artery to act as an embolus causing massive infarction of the right lower lobe. It had a wide extensive base which was firmly moored to the chordae tendineae of the tricuspid valve, and was separated piecemeal from them with some difficulty. The wall of the right ventricle was degenerated and fibrosed, and only a very thin rim of muscle tissue remained, while at the tip the whole wall was little more than one-sixteenth of an inch thick. The endocardium, valves, and blood vessels were healthy.

None of the other organs or the systemic blood vessels showed any pathological change. There was no oedema of the extremities.

Discussion

The course of events would appear to have been as follows. A primipara aged 23 suffered for seven years from recurring attacks of acute bronchial asthma. The subject of serious and unsuspected cardiac damage which gave rise to none of the usual physical signs of heart failure, she survived the incidence of an intracardiac thrombus, and two years later had a normal pregnancy and labour. She died unexpectedly during or following an attack of acute bronchial asthma, her death, which was preceded by an attack of acute suffocative pulmonary oedema, being ultimately precipitated by embolic pulmonary infarction resulting from extensive intracardiac clotting.

The post-mortem findings made it clear that the patient had had in the past, probably in infancy, some acute infection, causing myocarditis (but not endocarditis), which gave rise to no direct physical signs, probably not even a disturbance of rhythm, but which later produced indirect evidence of cardiac damage and of the heart's increasing inefficiency in a recent limited response to effort associated with dyspnoea and palpitation, these urgent symptoms probably being due to increased rate exhausting the contractile force of the heart with diminution of the output. The labouring heart always dilates, dilatation being the physiological answer to an increased call for effort, and, heart failure having set in, the chambers do not completely get rid of their contents, so accumulation and stasis takes place. Any sudden severe strain, such as an acute attack of asthma on a failing heart, like the one under discussion, would greatly aggravate and accelerate this stasis and would produce ideal conditions for intracardiac clotting.

The seeming lack of diagnostic acumen is easily explained: in the absence of a history of heart infection or even of the more usual physical signs of heart failure in

an unknown patient who had had a normal labour four months previously, one would be most unlikely to suspect, much less be able to assess, the heart's efficiency during an attack of acute bronchial asthma of any severity. It must be noted, too, that the subjective signs of a failing heart, although definite, were elicited only after the patient's death, and even then with the greatest difficulty.

In reaching the conclusion that asthma was the factor which ultimately precipitated death, a few questions presented themselves for satisfactory explanation. (*a*) Was it possible for the patient to have had a normal labour of twenty-four hours' duration four months previously if her heart was in such a damaged and dangerous condition? (*b*) If her heart was in so grave a condition, surely there would have been some very definite physical signs? (*c*) Can ante-mortem clotting take place in the heart in the absence of valvular disease or endocarditis? (*d*) Were her attacks those of true *bronchial* asthma? (*e*) What is the evidence that she survived an attack of intracardiac clotting two years previously?

In answer to the first three questions Sir James Mackenzie (1917) said that he repeatedly saw individuals in the greatest danger whose serious condition had never been suspected, because there was present no physical sign indicating heart trouble, but if the patient's reaction to effort, as measured by her own sensations, had been investigated and appreciated, the gravity of the condition would have been recognized; that many cases of sudden death may be due to acute oedema, usually associated with mitral stenosis, but that there may be no valvular lesion; and that he was often unable to account for such a death. Further, he stated that many women with serious organic heart trouble seem little the worse for their pregnancy and that they may bear their confinement well, yet the effect of pregnancy on a diseased heart is that its strength is lessened permanently.

That the patient's attacks of acute asthma were of the bronchial type cannot be doubted, as they responded repeatedly to ordinary anti-asthmatic remedies, were typically bronchial in appearance and behaviour, and were relieved by the endocrine readjustment of pregnancy. In the severe sublethal attack of two years ago, which also began as acute bronchial asthma and which very soon became a cardiac catastrophe, it would appear that the superimposed heart signs and symptoms were due to intracardiac clotting. The heart signs appeared very rapidly, the patient all but died within a few hours, the attack was apyrexial, recovery was very rapid, and following it appeared very definite and rough valvular murmurs which cleared up with incredible speed. It is probable that the murmurs were due to an organized thrombus either in the right auricle or in the right ventricle—more likely the latter—moored to the chordae tendineae of the tricuspid valve (as described in the post-mortem findings), and that the rapid disappearance of the murmurs was the result of the rapid organization and absorption of the thrombus. Moreover, the fatal attack started in an exactly similar way, and the post-mortem findings gave a very positive explanation of the course of events in this final attack.

Summary of Conclusions

A fatal case of intracardiac clotting precipitated by an attack of acute bronchial asthma and followed by massive embolic infarction of the lung in a young primipara is described.

There is evidence that two years previously the patient survived intracardiac clotting which also resulted from bronchial asthma.

Intracardiac clotting may take place in the absence of endocarditis and may give rise to the signs of a gross valvular lesion.

A seriously damaged heart may, even with the strain of pregnancy and a lengthy labour, show no direct physical sign of failure.

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ACUTE PSYCHOSES FOLLOWING SURGICAL PROCEDURES

BY

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In the *British Medical Journal* of January 28, 1939 (p. 162), Dr. Barber describes a case of acute mental illness from a gangrenous appendix with abscess formation, and refers to such a mental manifestation as being "very rare" in surgical conditions. The case was interesting and instructive, but I believe it would be more instructive still were it realized that such a state is by no means a rarity.

In Erdington House (the Birmingham Mental Observation Wards) we see from time to time acute psychotic patients of this type admitted from surgical wards. There is a history, more or less common to them all, that the patient has had surgical treatment for some acute condition—for example, appendicitis, strangulated hernia, severe wounds—and that in a varying number of days after an apparently satisfactory operation or other procedure there develops an acute mental state characterized by restlessness, confusion, noisiness, impulsive violence, resistance to all nursing attentions, and occasionally by fleeting hallucinations and delusions of a persecutory nature. Removal to the mental observation wards becomes necessary.

On admission the above mental state is easily confirmed. But in addition there is a fairly obvious general physical condition of toxaemia—rapid pulse, slight pyrexia, hot dry skin, malar flush or sallow sunken features, dry brown furred tongue, sordes on teeth, etc. The entire ensemble of symptoms and signs, both physical and mental, gives, in other words, the characteristic picture of a toxic psychosis. With this clinical picture one knows from experience that there will almost invariably be found either a large collection of pus under an apparently healed wound or else that pus already discharging is not gaining a sufficiently free outlet; and that vigorous measures to this end will produce a rapid and satisfactory result. The following four typical cases are illustrative.

Illustrative Cases

Case 1.—A man aged 23 underwent herniotomy on February 25, 1937. On March 3, after apparently normal progress, he became violent, noisy, and difficult, and was transferred to Erdington House the next day. On admission he was dull, morose, suspicious, and restless, and complained of pain in the wound, which was seen to be tense and swollen, the surrounding tissues being inflamed and indurated. With hypertonic fomentations there began on the 8th a most profuse and vigorous discharge of thick, foul greenish-brown pus. By the following day the temperature had subsided; he was quiet and brighter, and expressed great relief. On the 10th he was returned to the surgeon with paralytic ileus, from which he also recovered, and at no time was there any recurrence of mental symptoms.

Case 2.—A man aged 29 had appendicectomy performed, with drainage, on June 7, 1938. The following day he became restless, confused, and uncertain. He continued to get worse mentally, and was transferred to us on June 14. He was quieter on admission, but was confused. The wound was oozing thick foul pus. With vigorous local treatment the discharge became more rapid; in two days the superficial layers of the wound opened and pus discharged freely from between the tissue layers. From then onwards the mental symptoms ceased entirely.

Case 3.—A youth aged 17 was treated in surgical wards on November 30, 1938, for concussion, fracture of the skull, and an extensive lacerated wound of the left popliteal region. Plaster was applied to the leg over the dressing to prevent contracture. The cerebrospinal fluid was clear. At the end of three weeks of apparent progress he became noisy, irrational, and violent, and was transferred here forthwith. He presented the typical toxic picture, and was noisy and most violently resistive to all attentions. The original plaster was still on the leg, and foul and pungent-smelling pus from the popliteal wound was oozing over the top. The plaster was removed, and an extensive area of unhealthy hypertrophic granulations covered with thick pus was revealed. In twenty-four hours he became quite manageable and would freely permit nursing attentions and the frequent changes of dressing required. The acute mental state subsided in about three days. Some mental dullness still persisted for four or five weeks, partly attributable to his skull condition and partly to the previous intense absorption of toxic products from the wound.

Case 4.—A man aged 24 had a large abscess of the right lower abdominal wall opened and drained on October 25, 1936. After two weeks he became violent and irrational, and was transferred to us on November 13. He presented the usual toxic picture and was resistive, confused, and uncertain. The wound showed a discharging sinus. With the usual measures he improved considerably in a week, but remained rather dull and slow for a longer period. The wound had healed in two weeks, but for six weeks further the temperature remained erratic, and deep tenderness and a slight ache in the right side suggested a remote and inaccessible pocket of pus. However, with subsidence of temperature all mental symptoms had ceased and he made a rapid return to good general health.

These are four cases representative of many others; in all of them pus was either pent up or was discharging sluggishly, and they all responded to efforts directed to releasing the pus. In Case 3, although the acute mental symptoms subsided rapidly, there remained for a longer period a dulling of the sensorium; here there was an extensive highly absorbent area which had been closely in contact with large quantities of foul pus for nearly three weeks. This is in keeping with the general observation that where pus has been present in large quantity and for long periods before the acute mental outbreak one finds that residual mental symptoms remain which clear more slowly. In Case 4 retardation of recovery appears to have been very probably due to an undiscovered but suspected pocket of pus which eventually absorbed.

In none of the cases quoted was there any previous history of mental illness. Where, in rare instances, such a history does occur the condition under discussion remains an entity on its own and follows the course of the others with normal mental histories.

Conclusions

The condition described is not infrequently met with in mental observation wards, and presents a characteristic picture readily recognizable by three features: (1) the surgical history; (2) a toxic physical state; and (3) an acute confusional psychosis.

Where such a psychosis follows or is superimposed upon a surgical condition the surgeon should consider the possibility of septic absorption from an infected wound. The early recognition of their toxic origin would often prevent such cases from going as far even as the mental observation wards.

The prospects of rapid recovery from the acute symptoms are good, given efficient and early drainage.

The occurrence of residual symptoms is related to the duration and extent of septic absorption before the psychosis; but although these symptoms may be slow in clearing the ultimate prognosis remains, on the whole, good. Only very infrequently do residual symptoms prove so marked and so persistent that treatment in a mental hospital is necessary.

SEVERE SKIN AND GENERAL REACTION FOLLOWING THE ADMINISTRATION OF M & B 693 AND EXPOSURE TO ULTRA-VIOLET LIGHT

BY

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It has long been recognized that certain drugs, among which are sulphonal, veronal, and luminal, have the capacity, when taken orally, to render human skin sensitive to the effects of actinic light, but it is doubtful whether the administration in medicinal doses has given rise to any untoward changes in the skin following exposure to light. The proclivity to photosensitization, however, is of much greater significance since the introduction of the new but already widely used group of derivatives of *p*-aminobenzenesulphonamide (sulphanilamide). This group contains both dyes such as prontosil rubrum, rubiazol, the colourless compounds sulphanilamide itself (prontosil album), proseptasine, soluseptasine, uleron, and also the most recently introduced M & B 693 (2-sulphanilyl-amidopyridine), a compound of value in the treatment of pneumonia, gonorrhoea, and other infections.

It has been demonstrated (Rimington and Hemmings, 1938) that sulphanilamide causes an increased secretion of porphyrin in the urine in animals and in man, and of these coproporphyrin I is an active photosensitizer. Rashes varying in character and in severity have often been noticed following the administration of some drugs of this group; also attention has been drawn to the fact that the exposed skin is particularly sensitive (Frank, 1937), and it is the practice of some of the chemical-manufacturing firms to issue a warning that exposure to natural or artificial sunlight is inadvisable during the course of the treatment. Nevertheless it does not appear to be generally recognized that a reaction of very severe degree may take place as a sequel to exposure to light during or following the administration of the sulphanilamide group of drugs. I therefore record the following experience.

Case History

On January 20, 1939, a well-developed man aged 25 had a single exposure to ultra-violet light at a non-medical clinic. Five days later he was admitted to the Royal Hospital, Sheffield, apparently suffering from a very extensive burn of the second degree. His temperature was 102° F., and his pulse 90 to 108. He gave a history that the inflammation of his skin had followed shortly after an ultra-violet-light exposure. He was treated by the application of sterile dressings under a warm cage. The pain necessitated two doses of 1/6 grain of morphine. He was given prontosil album 15 grains thrice daily. On January 27 he looked ill

and distressed, his temperature varying from 101° to 102.8° and his pulse being 100. The whole of the facial skin was oedematous, red, and covered by brownish-black crusts. The lips were swollen and crusted, and the mouth was opened with difficulty. Numerous bullae were present on the inside of the mouth. The skin of the chest, abdomen, and lower two-thirds of the back was acutely inflamed and covered by the remains of large bullae. The skin covering the shoulders and sides of the chest was free from bullae. The limbs were less severely affected and were free from bullae. At this stage it was ascertained that the patient had been taking one tablet of M & B 693 three times daily for the treatment of urethritis for four days previous to the exposure to ultra-violet light. The prontosil album treatment was therefore promptly discontinued. On January 28 his temperature was 103.2°. Small bullae appeared on the areas which had previously been free—namely, the shoulders, sides of the chest, and limbs. The following day the temperature began to fall and his general condition improved. On January 30 the patient's temperature was normal and his general state much improved. From this date he made an uninterrupted recovery, and on February 14 was discharged from hospital. A visit to the ultra-violet-light clinic elicited the fact that the patient had received three minutes' exposure from a standard mercury-vapour lamp at forty inches back and front—a moderate dose.

Comments

As M & B 693 has had a very extensive clinical application since its introduction without record of the occurrence of severe skin reaction, it is reasonable to consider the possibility of some extraneous factor being responsible for the reaction experienced in the above case, and the following questions arise.

1. Was the reaction the result of exposure to ultra-violet light of an individual who had been photosensitized by taking M & B 693?—Unfortunately there was no analysis of the urine during the illness to ascertain whether porphyrin was in excess. Wien (1938), in a comparison of the effects of sulphanilamide and M & B 693 in animals, found that, whereas the former caused a large increase in the excretion of porphyrin in the urine, M & B 693 in two to four times the amount had no effect. But cases of photosensitivity have been recorded following the administration of drugs of the group closely allied to M & B 693. Newman and Sharlit (1937) in fact describe a very similar sequence of events—namely, an extensive scarlatiniform eruption apparently excited by sun-bathing in a man who had taken prontosil for four days. In this case the rash was entirely confined to the area exposed to light. It is interesting to note that the rash was again elicited on previously involved skin by further administration of the drug in the absence of added irradiation. Frank (1937), on the other hand, reports two cases, taking sulphanilamide, in which exposure to sunlight produced an eruption that was not confined to the exposed parts. Menville and Archinard (1937) report four cases; in each the rash appeared only on the skin that had been exposed to light.

2. Had the patient an idiosyncrasy for M & B 693?—Drug dermatitis is not an uncommon occurrence, but fortunately the reaction is usually an erythema not comparable in severity to the degree in the case referred to. Nevertheless the contingency cannot be entirely excluded, for Schonberg (1937) has recorded an extensive purpuric and scarlatiniform eruption following the fourth day of sulphanilamide treatment. The same writer issues a warning against the repetition of the drug if a skin reaction has occurred, for a single 5-grain sulphanilamide tablet was sufficient to produce severe general symptoms and oedema of the face and larynx in the case referred to.

The fact that in the Sheffield case the mucous membrane of the mouth and also the skin covered by protective goggles were involved in the reaction appears at first sight to minimize the importance of the exposure to light as an exciting factor in the causation, but dermatologists are familiar with the occurrence of a rash extending a considerable distance from the site of contact with the sensitizing agent in cases of sensitization dermatitis.

Conclusions

Taking into consideration the small dose of M & B 693 in the foregoing case and the onset of the symptoms shortly after the exposure to ultra-violet light, there appear to be grounds for assuming that this man's skin was photosensitized by some chemical reaction following the administration of M & B 693, and that the exposure to a moderate dose of ultra-violet light precipitated the onset of an intense reaction, which at one time gave rise to considerable anxiety. Unless further clinical and experimental experience proves this contention to be erroneous, it is desirable that every prescriber of M & B 693 should be aware of this potentiality, and every patient be expressly warned of the danger of exposure to strong sunlight or any form of artificial sunlight during the time he is taking the remedy.

I wish to express my indebtedness to Mr. H. B. Yates for kindly permitting me to publish this case, and also to Professor E. J. Wayne for the valuable information he has given me.

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Clinical Memoranda

Extradural Hydatid Cysts producing Paraplegia

Hydatid disease of the spinal column is rare enough to justify a record of the following case, which is also noteworthy for the rapid development of the paraplegia.

Case History

The patient was a man aged 27 who had contracted hydatid disease in India in 1936, the primary focus being in the neck. Three operations had been performed in India for the condition. Three weeks before admission on September 23, 1938, he began to experience weakness in the right hand and tingling and numbness down the inner side of the right arm. There was in addition a certain amount of weakness of the left hand, which had appeared since his operations but had since remained stationary.

Clinically the patient was in good general condition. There was a deep pitted scar on the lateral side of the clavicular head of the left sterno-mastoid and two other linear scars to the left of the upper dorsal spine. There was palpable deformity of the lower cervical spines and undue prominence of the spine of the first dorsal. Movement range was a little impaired. The right hand showed a moderate degree of wasting of the intrinsic muscles and to a lesser extent the wrist flexors, with loss of power; there was hypo-algesia in the cutaneous distribution of the right ulnar nerve. The left hand showed slight wasting and objective weakness of the intrinsic muscles, but no sensory change. The cranial nerves were intact, the fundi oculi normal, and there was no other alteration in central nervous system function. No clinical

evidence of hydatid metastases was found in the chest or abdomen.

The leucocyte count was 14,680 per c.mm. and the eosinophil content 6 per cent. Radiographs of the spine showed erosion and new bone formation in the bodies and laminae of the seventh cervical and first dorsal vertebrae, with some subluxation of the latter. Over an observation period of ten days there was no advance in nerve symptoms, and the patient was discharged, no surgical intervention being considered advisable at that stage.

Progress of Symptoms.—There was no symptomatic advance for two and a half months, and then the patient began to experience increasing weakness in the legs and trunk. A week after this started he was quite unable to walk, and he was readmitted on December 27, 1938. The patient had now lost condition considerably. The right hand showed much wasting of the intrinsic muscles with complete loss of power. There was complete motor and partial sensory loss below the level of the first dorsal nerve supply. The lower limbs were rigidly extended; reflexes were exaggerated and there was patellar and ankle clonus; plantar responses were both extensor. Lumbar puncture revealed a clear fluid at low pressure. Examination made in the bacteriological department of the University of Birmingham showed a marked protein increase and a cell content of 3 per c.mm. The centrifugalized deposit showed no hydatid scolices or hooklets. Cord compression progressed rapidly. Sensory loss became complete in a few days with a well-defined demarcation level at dorsal 1; the muscles of the lower limbs became flaccid with loss of reflexes; gaseous distension of the bowel increased and urinary retention supervened.

Operation.—In view of the urgency, laminectomy was undertaken on January 5. Respiratory excursion was poor, as only the diaphragm remained in action, and a continuous admixture of carbon dioxide to the anaesthetic vapour was necessary. Operative approach was very vascular and sclerosis of bone much in evidence. Cord exposure was obtained from cervical 7 to dorsal 2, no evidence of bony pressure being encountered. A group of three hydatid cysts were found growing extradurally at the level of the first dorsal segment and on the left antero-lateral aspect of the cord, the largest being about the size of a grape. These were removed and the wound closed. Towards the end of the operation respiratory failure supervened and death ensued shortly afterwards.

I am indebted to Mr. B. T. Rose, consultant surgeon, and to Mr. E. S. Clayton, medical superintendent, to this hospital for permission to publish this case record.

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"Sulphanilamide Rash"

We report a case of skin eruption following sulphanilamide treatment, and would be interested to hear if the condition is a common one.

A Gurkha rifleman aged 25, admitted to hospital for cellulitis of the right thigh, was treated with sulphanilamide (Boots), 3 grammes daily by mouth for four days, in addition to antiphlogistine dressings. No other drugs were administered. Two days later there appeared a diffuse corymbose maculo-papular eruption on the trunk, upper arms, and thighs, with moderate irritation. When the rash was fully developed there was a distinct grouping of the papules, which were irregular, flat-topped, and shining, resembling those of lichen planus in type and colour but showing some slight scaling.

Apart from this complication the patient made an uninterrupted recovery.

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Reviews

CONTROL OF THE CIRCULATION

The Control of the Circulation of the Blood. By R. J. S. McDowall, M.D., D.Sc. With the assistance of J. E. Malcomson, M.D., and I. McWhan. (Pp. 620. £3 13s. 6d. net.) London: Longmans, Green and Co. 1938.

It has hitherto been unusual for British authors or publishers to produce monographs or handbooks on the scale which is so characteristic of Germany, and, to a less extent, of the United States. This is certainly true of physiological works; one need only compare the modest two-volume textbook edited by Schaefer with, say, the four-volume work on the physiology of the circulation by Tigerstedt or the more recent "Handbuch" of normal and pathological physiology in some seventeen or eighteen volumes. The absence of large-scale works in the English language has undoubtedly been a handicap to our own research workers, because the foreign texts have not always been readily available and are not so convenient for use as books in our own tongue. It is therefore with especial pleasure that we welcome the appearance of Professor McDowall's most important book entitled *The Control of the Circulation of the Blood.* The author piously dedicates his book "to those who have worked in this field and have passed on, in the hope that those who follow may increase the more easily the store of knowledge of which they have been the fortunate heirs."

Professor McDowall points out very truly that it is now impossible for any one man to keep up with the flood of publications in even a small section of any subject, and that the abstract journals themselves are becoming too large for ready reference. The scale on which scientific papers are being turned out all over the world can be judged from the fact that Section A III of *British Chemical and Physiological Abstracts,* which deals with physiology, biochemistry, anatomy, and related sciences, publishes between 12,000 and 14,000 abstracts annually, and even there the ground is not covered absolutely exhaustively. Review articles are, of course, of great assistance, but they may appear at too infrequent intervals and are usually unindexed. The large-scale monograph is therefore of inestimable value in providing a systematic birds'-eye view of the subject and enabling the investigator to find his way among the original papers. Professor McDowall has successfully achieved this task in his book, which is notable for its bibliography of some 7,000 items, occupying 113 pages of closely printed type in double columns and comprising almost every paper of significance in this field. Though the full titles of the papers are not given, a few words indicate the principal subject dealt with.

The book opens with an excellent survey of the innervation and control of the blood vessels, with special reference to vasodilator nerves. Here, as elsewhere, invaluable tables appear summarizing the relevant literature. The section on the aortic and sinus reflexes is too short to enable the subject to be adequately dealt with, and some recent work, both histological and experimental, is overlooked. There follow chapters on the blood depots, and the properties of the circulation in special regions (such as the brain, lungs, heart, skin, liver, and kidney). The control of the resting heart rate is then reviewed, with a full discussion of the role of the vagus and sympathetic nerves and a short note on chemical transmission. The section on the carotid body is not as full as the importance

of the subject merits. A very complete description is given of the action of adrenaline on the circulation, the conditions modifying its activity, and the factors controlling its secretion. A four-page bibliographical table summarizes the chemical and nervous stimuli influencing the adrenal gland. Chapters follow on the action of CO_2, oxygen lack, local and general asphyxia, reactive hyperaemia, temperature changes, and the effect of sleep and mental states. There is a useful note on electrical changes in the skin. The circulatory changes in exercise are described fully and the effects of training admirably discussed. The remaining chapters deal with haemorrhage, the actions of post-pituitary extracts, the functions of the hypothalamus, and the actions of acetylcholine, atropine, histamine, and certain other substances. There are thirty-eight illustrations, all taken from Professor McDowall's own researches. The figures might with advantage have been increased in number and selected from more varied sources.

The book is admirably printed, but on paper which is unnecessarily heavy, making its use somewhat difficult. The subject index is very incomplete and gives an inadequate idea of the wealth of material discussed in the text. The price of 73s. 6d. suggests that the publishers were unduly pessimistic about the appeal which this work would have to the scientific and medical public. When Professor McDowall prepares another edition he might consider adding full sections on such topics as experimental shock, hypertension and hypotension, the regulation of the cardiac output, and the action of tissue extracts. It would enhance further our sense of obligation to him for his devoted efforts.

PSYCHOPATHOLOGY

Clinical Studies in Psychopathology. A Contribution to the Aetiology of Neurotic Illness. By Henry V. Dicks, M.A., M.D., M.R.C.P. (Pp. 248. 12s. 6d. net.) London: Edward Arnold. 1939.

This is a book which is most welcome, for it is from the pen of an eclectic psychotherapist who owes no allegiance to any one school of "metapsychology" but has succeeded in setting down his own psychopathological beliefs clearly and logically. He leans chiefly on Freudian doctrines as the most profound and far-reaching of the schools of thought, but he appreciates the usefulness of some Jungian concepts, especially of the unconscious anima and conscious persona, which must be harmoniously fused if the individual is to become adequately adjusted towards life. He regards Adlerian doctrine as over-simplified and superficial, but admits its practical utility in the treatment of many patients. As he says, anyone who has practised deep analysis must admit how almost always the broad outlines and often the details of Freudian teaching are confirmed; but the reduction of abnormal mental reactions back to the frustrations at the life stage of breast-feeding and the various unsatisfactory attempts at compensation for these frustrations make for difficulty of understanding on the part of any reader who has not a considerable acquaintance with psycho-analytic literature.

Dr. Dicks founds his philosophy on a rejection alike of materialism and crude dualism and the acceptance of a psycho-physical emergence as the true being of the individual. He recognizes "three main instinctive tendencies" which seem clearly discernible by objective methods of study whether in animal or child behaviour: (1) the self-preservative instinct, most fundamental of all and earliest in its domination of the field, and so motivating the morbid changes in the other tendencies; (2) the sexual instinct; and (3) the aggressive instinct (the death instinct of Freud). Infantile fear is at the root of repression and other mechanisms of the abnormal manipulation of "abnormal" psychic tensions, and the essence of psychotherapy consists in the restoration of the sense of security. All the chief aspects of psychoneurotic illness are dealt with and are illustrated by illuminating case histories, which are clearly and briefly narrated. If the chapter on drug addiction appears to be somewhat restricted and even a little weak it is because neither the author nor anyone else has studied a large enough number of cases sufficiently deeply.

This book will be appreciated by many workers in the psychotherapeutic field and will repay the careful study of all interested in the subject. It is a credit not only to the author but to the Tavistock Clinic, where a great deal of the work has been done and which is doing so much to train a balanced and effective school of British psychotherapists.

HEREDITY

The Study of Heredity. By E. B. Ford, M.A., B.Sc. The Home University Library of Modern Knowledge. (Pp. 256; 5 figures. 2s. 6d. net.) London: Thornton Butterworth. 1938.

Heredity. By A. Franklin Shull. Third edition. (Pp. 442; 168 figures; 4 tables; frontispiece. 21s.) London: McGraw-Hill Publishing Company. 1938.

During the earlier years of this century there must have been many medical men who followed with the keenest interest the development of the new science of genetics, delighting in its clarity and simplicity, and looking forward to beneficent human applications. But soon complication followed complication, and finally, worst of all, the subject received the close attention of the mathematicians. The medical amateur who tries to bring his knowledge up to date must surely feel bewildered. So might a returning antipodean aunt gaze in timid wonderment, striving to recognize in an intent and frowning savant the seductive infant of thirty years before. In his remarkable little book Mr. Ford comes to the rescue. In a very small space a complete outline is given of the science of genetics, with particular emphasis on its place in biology as a whole. The latest advances are included, and difficulties are met not by omissions but by a series of successful attempts to explain them in simple language. So, pleasantly and persuasively, is presented, with many apt examples, a most admirable essay. There are only five diagrams, and this is perhaps a pity, because diagrams would have simplified some descriptions. But even this omission emphasizes the quality of the book: there can be few students of genetics who would care to attempt the feat, so successfully performed here, of expounding their subject with only this handful of illustrations. It is a book to be recommended with every confidence.

An extract from the preface to the first edition of Shull's *Heredity* makes it clear to what audience this book is primarily addressed. It has grown out of a lecture course, at the University of Michigan, to large classes of students who for the most part have had no previous biological training and who are seeking a general education: hence the chapters on elementary cytology and embryology, the emphasis on commercial and human applications, and the chapters on problems of population growth, race, and immigration. The book is authoritative and lucid; at times the presentation merits the word "masterly." There are many excellent diagrams. There would be little to criticize unless it is suggested that the book is a suitable text for students of biology or medicine. There is too great an economy of statement for that, and

a brevity which at times approaches the perfunctory. For example, the medical student will find three-quarters of a page, including five or six conditions, on hereditary diseases of the skin ; he will see more during his first month's clerking at a dermatological clinic. He will find nystagmus defined as " rolling of the eyeball," and may well shudder to contemplate the dire results of offering such a definition to a peppery physician. The book ends with no fewer than 660 questions ; but these are all to be answered (as in verbal group intelligence tests) by " true " or " false," or by the filling in of a word, or by crossing out one of two words. The penultimate question reads: " The mean stature of 100 men chosen at random from a population of a million is a (better, worse) indication of the stature of the whole million than is the mean of 500 men." It is to be hoped that this horrible practice will not prove contagious.

VITAMIN B_1 AND BERIBERI

Vitamins and Vitamin Deficiencies. Volume I. Introductory and Historical. Vitamin B_1 and Beri-beri. By Leslie J. Harris, Ph.D., Sc.D., D.Sc., F.I.C. With a foreword by Sir Frederick Gowland Hopkins, O.M., F.R.C.P., F.R.S. (Pp. 204 ; 50 illustrations. 8s. 6d.) London: J. and A. Churchill. 1938.

The survey of vitamins and vitamin deficiencies which Dr. Leslie Harris of the Cambridge Nutritional Laboratory is preparing will be completed in seven volumes. The first volume is entitled *Introductory and Historical. Vitamin B_1 and Beri-beri.* Sir F. Gowland Hopkins contributes a foreword in which he notes the extreme difficulty of dealing relatively briefly with a subject that is advancing and expanding so rapidly. The changing nature of the subject is the reason why the author has divided his work into a number of small volumes, because the early part of a large volume is apt to be out of date before the whole work is completed.

In his historical account of the discovery of the vitamins the author quotes several interesting early references that are not generally known. For example, the use of lemon juice as a cure for scurvy is taken back to the beginning of the seventeenth century, and in 1847 the definite statement was made that scurvy was due to the lack of an essential element. Similarly, in 1824 it was suggested that the action of cod-liver oil on rickets was due to the presence of an imponderable amount of substances which could not be detected by chemists. The history of the rapid development of knowledge in the present century is a complex and controversial subject, but the author gives a clear narrative which Sir Gowland Hopkins describes as being perhaps the fairest account of pioneer labours which has yet been written.

Most of the volume is concerned with the nature and actions of vitamin B_1. It is gratifying to realize that our knowledge of this substance is now fairly extensive. Its formula is known and it can be prepared synthetically ; furthermore, one at least of its fundamental actions has been established, since vitamin B_1 diphosphate ester has been shown to be the co-enzyme essential for the conversion of pyruvic acid to CO_2 and acetaldehyde. Hence vitamin B_1 is essential for normal carbohydrate metabolism, and a considerable proportion of the numerous disorders associated with its deficiency can be attributed to derangement of carbohydrate metabolism.

The essential feature of surveys of this kind is that they should be accurate and up to date and should portray the subject in correct proportions. This survey of vitamins fulfils these conditions, and it is all the more valuable because the mere volume of literature on vitamins represents a serious obstacle to the advance of knowledge.

UNIFORMITY IN HEALTH ADMINISTRATION

Public Health Services. By Norman Wilson, M.A., Administrative Research Series. (Pp. 244 ; 7s. 6d.) London: William Hodge. University of London Press. 1938.

Uniformity in administration makes things easier. On that account it tends to be favoured by administrative officers, and in the case of those who are possessed of a strongly administrative cast of mind often creates in them a disposition to apply the principle on all occasions. It is therefore not wholly surprising that, in a work which he has recently issued on public health administration, Mr. Norman Wilson, who himself holds an administrative position, should figure as a convinced exponent of uniformity.

The book presents a competent survey of the administration of English county boroughs, with special reference to four principal public health services. The author queries the effectiveness of local public opinion as a stimulus to the introduction of health reforms, and regrets that the control of the central health department over the actions of local authorities often appears to go no further than to deplore, in a letter to the town clerk, the inadequacy of a health service as managed by some borough council. The author's thrusts at these and similar imperfections are shrewd and seldom unmerited, and may well cause some authorities to look to their laurels. His own panacea is the achievement of a large measure of administrative uniformity. This, which he calls the primary need, should, he suggests, be brought about, first, by the aggregation of local authority areas on a spaciously regional basis —for which there is much to be said—and, second, by the subjection of each region so created to the rule of an officer of the Ministry of Health, not necessarily medical, whose function it would be to decide what new developments should be permitted, to inform himself through his staff of what is afoot in his region, and to report it to the Minister. This proposal is essentially bureaucratic ; it deprives local authorities of their initiative in health matters ; and for these reasons will be repugnant to many who, like ourselves, believe that if people are allowed to do the right thing in their own way they will do it with good will and get good results.

While we do not concur in Mr. Wilson's conclusions, nevertheless we have read his book with pleasure and edification, and can cordially recommend it to all who are concerned in the types of problem with which it deals.

Notes on Books

Comparative Anatomy and Physico-pathology of the Autonomic Hypothalamic Centres, by Dr. A. A. BOON of Amsterdam, is Supplement XVIII of the *Acta Psychiatrica et Neurologica* (Copenhagen: Ejnar Munksgaard ; Haarlem: De Erven F. Bohn). The author gives a competent review of the extensive literature relating to this subject (nineteen pages of references). He accepts the view that the hypothalamus integrates the sympathetic responses and produces the widespread visceral reactions which are characteristic of the major emotions. He shows that there is evidence for parasympathetic centres in the medial part of the hypothalamus and that these are intimately connected with the control of sleep. The complex relations between the pituitary gland and the hypothalamus are also discussed.

Personality Development and Social Control in Terms of Constitution and Culture comprises three lectures given at the Tavistock Clinic in 1937 by Dr. IRA WILE (Oxford University Press, 3s. 6d.). In these lectures the conception

of personality is defined, and, the inherent and environmental factors having been first discussed, the author proceeds to review the manner in which our social milieu contributes to disorders of personality. This scholarly last lecture merits the attention of all those interested in medicine and sociology, and will promote much thought as to how, when the present lamentable state of unrest shall have passed away, we may build a better world in which our children may have a chance to grow up to a more complete mental and moral stature.

Maternity Care in a Rural Community. Pike County, Mississippi, 1931–1936, by Dr. MAXWELL E. LAPHAM, is published in London by the Oxford University Press at 1s. 6d. This modest pamphlet gives a well-presented report of a carefully carried out inquiry into maternity conditions in a rural community since the establishment seven years ago of improved public health services. Clear tables show their achievements. The figures are then analysed to reveal and account for weak spots—failure in pelvimetry as part of ante-natal care, lack of adequate post-partum examinations and of treatment of syphilis emerge. Responsibility for just over half the deaths is placed upon the physician, midwife, or health department, jointly or alone. An excellent list of suggested improvements closes the pamphlet, which is evidently intended for the actual workers under the "Program." One wonders, however, whether the physician will accept "responsibility for seeing that those with syphilis are adequately treated."

Volume IX of the *Collected Papers of the Walter and Eliza Hall Institute of Research in Pathology and Medicine*, thirty-nine in number, has been issued by this Institute in Melbourne. The volume may be consulted in the Library of the British Medical Association.

Preparations and Appliances

PORTABLE OBSTETRIC TABLE

Dr. C. RUTHERFORD MORISON, M.C.O.G. (Harrogate), writes:

The portable obstetric table illustrated is designed to overcome one of the major difficulties in domiciliary, and to some extent nursing home, obstetric practice—a satisfactory lithotomy position. The advantages claimed for the table are:

(1) It is easily portable. Although the weight is 36 lb.—and this may be considered by many a burden on the fully equipped modern obstetrician—yet it is less than half the weight of most portable operating tables, and unless there is a definite indication for its use in any particular case it can remain in the car until and if needed. (2) In use it is perfectly rigid and stable. (3) The price is reasonable. (4) The table is placed on the patient's bed, and in this way the inconvenience of moving the patient is eliminated. (5) The table is much more satisfactory than the obstetric help, because the patient is fixed in the lithotomy position and no further help is required from the nurse in attendance to keep the patient in position. (6) The table enables perineal repairs and other minor procedures to be carried out in the lithotomy position, and most obstetricians would agree that this position of the patient is the most satisfactory for these operations.

Some of the details of construction and use are worthy of mention:

(1) When open the table measures 30 in. by 30 in.; when closed, 30 in. by 16 in. (2) It is made of laminated multiply wood 1 in. thick to ensure stability and to prevent warping. (3) It has been found to be considerably cheaper to cover the table with two layers of rubber underfelting, over which is glued rubber sheeting, rather than to cover it with sponge rubber, such as is commonly used on operating trolleys, etc. It is, however, advisable to cover this again with loose rubber sheeting when in use. (4) Any tendency for the table to slip off the bed (say during a difficult forceps delivery) can be simply prevented by pushing the lithotomy crooks one to two inches beyond the level of their screw supports; these ends then grip the mattress. Although it has never been found necessary, additional and certain support can be obtained by using the handles which hold the lithotomy crooks when the table is closed, fixing to them any convenient straps, and fixing these in turn to the patient's head end of the bed. (5) The table can be placed anywhere on the bed most convenient to the lighting of the room. (6) The lithotomy end of the table is made 3 in. thick to be able to withstand the strain demanded of it. It does not, therefore, fold quite in the middle, but so that it will fit into this extra thickness.

Since using the table on several occasions I can testify as to its usefulness, and especially to its superiority over the obstetric help. Especially have I found it valuable in breech delivery.

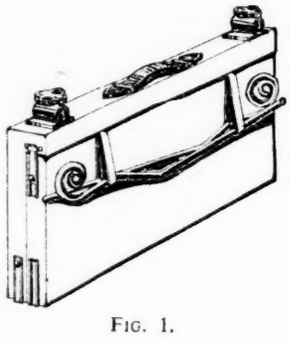

FIG. 1.

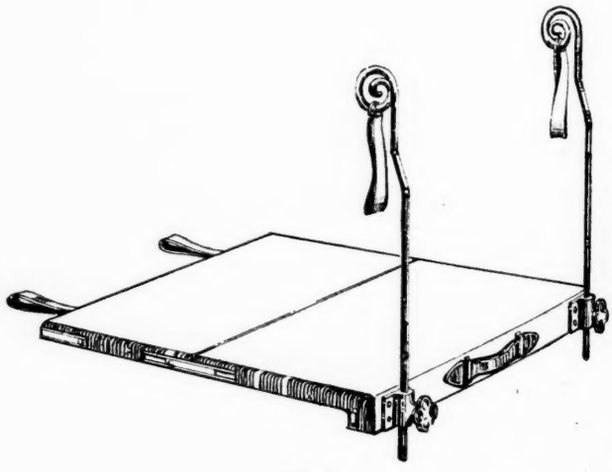

FIG. 2.

The table has been made for me by Chas. Walker and Son, 32, Parliament Street, Harrogate, from whom replicas may be obtained for £4 4s. This price does not include the lithotomy crooks, as personally I make use of the pair which serve for the consulting-room couch, and others may also prefer to have this arrangement. If not, they may be obtained from Chas. F. Thackray, Ltd., Park Street, Leeds 1, at the price of £1 7s. 6d. I am greatly indebted to Chas. Walker and Son for the suggestion of many practical details, the illustrations, and their unfailing courtesy in complying with my wishes.

Since the table was completed I have tried to find out whether there is anything similar on the market, but have failed to find anything in this country. However, in DeLee's recent edition of *Principles and Practice of Obstetrics*, on page 1023 is illustrated Gilbert's portable obstetric table, which, although differing in many details, undoubtedly incorporates the functions of the table described, so that no originality is claimed for the idea.

PROPHYLACTIC INOCULATIONS AGAINST ANIMAL DISEASES IN THE BRITISH EMPIRE

BY

SIR LEONARD ROGERS, M.D., F.R.C.P., F.R.S.,
Major-General I.M.S.(Ret.)

Over sixty years have elapsed since the classical experiments of Pasteur on preventive inoculation against anthrax in sheep—so well depicted in the Pasteur film—opened up a new epoch in the history of medicine. The relief of human and animal suffering that has resulted from subsequent progress in that field of research is simply incalculable. Certainly several hundred millions of animals in the world at large have been saved from severe suffering in the past half-century by these means. Some faint idea of the benefits to animals as a class may be gathered from the data in the following table of the officially recorded preventive inoculations against five only of the principal epidemic diseases of animals in seven recent years in the British Empire (Table I). Brief notes on the nature and prophylaxis of those diseases may be of interest.

TABLE I.—*Prophylactic Inoculations against Epidemic Animal Diseases in the British Empire, 1931–7*

Country	Rinderpest	Blackquarter	Haemorrhagic Septicaemia	Contagious Pleuropneumonia	Anthrax	Total
India ..	10,631,825	1,140,039	5,455,929		212,590	17,440,383
Nigeria ..	3,228,128	3,299,393	150,158	433,881	37,806	7,149,366
Kenya ..	1,407,040	180,794		1,310,694	40,688	2,939,216
Uganda ..	396,237					396,237
Sudan ..	664,362			262,310		926,672
Gold Coast	217,426			2,024		219,450
Tanganyika	646,949			577	900	648,426
South Africa					20,000,000	20,000,000
New South Wales					1,366,004	1,366,004
Total ..	17,191,967	4,620,226	5,606,087	2,009,486	21,657,988	51,085,754

Rinderpest, or Cattle Plague

Rinderpest was prevalent in Great Britain as recently as 1865–9. It was only stamped out by the wholesale slaughter of infected animals and contacts at a cost of £1,119,994. In 1896–9 it carried off over two million cattle in South Africa before methods of immunization, worked out by Koch, Kolle, and Turner, enabled the epidemic to be stamped out and the Dominion saved from ruin. In 1899 it fell to my lot when in charge of the Mukhtesar Veterinary Research Laboratory to make and test the protective serum in India during outbreaks of rinderpest. Among some five hundred inoculated cattle not one developed the disease after the four-days incubation period. Yet among about the same number of uninoculated animals 50 per cent. became infected, and half of these died. So successful was the method that in the twelve months of 1929–30 the animals inoculated against rinderpest in India totalled 1,161,986, with a mortality of only 0.37 per cent. This was a twenty-ninth of that of uninoculated animals in the same outbreaks. By 1936–7 the number had risen to 2,768,421, so popular are these entirely voluntary inoculations among the agriculturists of India, who are mainly dependent on their cattle for both ploughing and draught animals. In the seven-year records the rinderpest inoculations in Indian and African British countries numbered no fewer than 17,191,967. The number of animals saved from serious suffering probably exceeds eight millions.

Rinderpest produces high fever, with extensive painful ulcerations of the mouth and gastro-intestinal tract, of about one week's duration, with purulent discharges from the orifices. In outbreaks among herds not protected by inoculation or previous attacks the usual mortality is about 50 per cent., and may reach 80 per cent. Up to recently the cost of preparing anti-rinderpest serum on a large scale has somewhat limited its use. This difficulty has now been overcome by the discovery of an efficient vaccine as the result of the work of J. T. Edwards, M.R.C.V.S., and others at the Mukhtesar Laboratory. Nearly a thousand doses can be made by the sacrifice of one goat, and it is being prepared provincially. It has already largely replaced the more expensive serum in India, where a recent report states that when this vaccine "is used in the face of actual outbreaks control is rapidly established and the outbreak can be stamped out." The saving of cattle by this means is therefore far greater at the present time than the eight millions or so directly resulting from the inoculations shown in the table.

Blackquarter

Blackquarter, also known as black leg or quarter ill, mainly attacks cattle, and to a less extent sheep and other animals. It produces high fever and painful swellings in various parts of the body which contain black blood and gas. Some 97 per cent. of those attacked die in one to two or more days (Edmonds and Walker, 1929). It occurs in nearly all parts of the world, and is caused by the *Cl. chauvoei* bacillus, which infects soil. Various forms of vaccine are used, but the most solid immunity is obtained from a formalized sterile vaccine made from an unfiltered broth culture of the causative organism (Wooldridge, 1934). In India in 1929–30 127,981 animals were inoculated against blackquarter, with a mortality of 0.004 per cent. The ratio of the deaths among the inoculated was an eighty-fifth of that of the uninoculated in the same outbreaks. The inoculations during seven years in the British Empire amounted to 4,620,226.

Haemorrhagic Septicaemia of Bovines

This infection is widespread in India, Africa, Europe, and America. It is caused by an easily cultivated short cocco-bacillus of the Pasteurella group. It produces fever and painful oedematous swellings and effusions into body cavities, accompanied by diarrhoea and congestion of the oral and other mucous membranes, with painful swelling of the tongue. The duration is from a few hours to several days, and the case mortality 50 to 95 per cent. (Wooldridge, 1934).

For protective inoculation both a serum and a vaccine are of value. The serum also has some curative properties in early cases. In India the vaccine is being increasingly used, as it produces longer immunity, or both may be given at the same time. The Mukhtesar Laboratory annually makes 3,000 litres of the vaccine. It is reported to be "very effective when employed during outbreaks of haemorrhagic septicaemia, the mortality being arrested" (Wooldridge, 1934). Among 806,901 inoculations of cattle and buffaloes in India in 1929–30 the

mortality was only 0.02 per cent. The ratio of deaths among the inoculated was only a sixty-sixth of that of the uninoculated in the same outbreaks. The animals protected by inoculation in seven years in Indian and African British countries amounted to 5,606,087.

Contagious Pleuropneumonia of Bovines: Anthrax

Contagious pleuropneumonia of bovines is widespread in Asia, Africa, and parts of Europe. It is caused by a small filterable organism, which can be cultivated. Painful effusions of fluid into the pleural cavities and lungs occur. It is not so fatal as the above diseases, but the long period of infectivity necessitates the slaughter of the affected animals. Immunization is effected by the use of vaccines made from cultures or from the virus containing effused fluids. Seven years' preventive inoculations in India and Africa amounted to 2,009,486.

Anthrax and wool-sorters' disease in man derived from infected hides of animals are too well known to require description. In South Africa anthrax has for some time caused greater loss than all the other animal diseases put together. In 1924–5, therefore, 2,085,365 animals were inoculated with vaccine supplied free by the Government. By 1936 the annual protective inoculations had risen to nearly eight millions. The figure in the table of 20,000,000 in seven years to 1937 is thus a conservative one. During the same period in New South Wales 1,366,004 animals were protected against anthrax.

Recent Increases in Animal Protective Inoculations

The following data illustrate the rapidity with which animal inoculations are increasing in different parts of the Empire (Table II). The yearly reports indicate that the lower rate of increase in African countries was due to insufficient trained staff to comply with the demands. There is scope for much further increase.

TABLE II

Area	1931 or 1930–1	1937 or 1936–7	Ratio of Increase
India	1,499,564	4,272,061	2.8-fold
African Colonies..	1,481,188	2,385,359	60 per cent.
New South Wales	74,478	377,396	5-fold

From the foregoing considerations it may safely be concluded that anything between ten and twenty millions of the fifty-one million inoculated animals shown in Table I have been saved from severe and prolonged suffering. When we bear in mind that in many cases epidemics have been controlled and stamped out by these means, the higher figure would appear to be a conservative one. Except in the case of anthrax, nearly all the inoculations have been in cattle. The economic saving can therefore be hardly less than forty to fifty million pounds in the seven years.

Need for Public Enlightenment

There is another aspect to this question that should be borne in mind by the medical profession. In 1907 I gave evidence regarding the suffering-saving value of rinderpest serum in India, from personal experience, before the Royal Commission on Animal Experiments. Questions on the subject were put by members of the Commission to the only two medical witnesses who supported the demand for the total prohibition of animal experiments. Both admitted their ignorance of rinderpest serum. Both demanded that its use should be prohibited by law. That demand is still made, although it is now clear that compliance with it could only increase the sufferings of animals as a whole a thousandfold; for under our humane laws in no experimental animal is "severe pain that is likely to endure" permitted.

Yet I have shown elsewhere that since the 1912 Royal Commission's final report found an emphatic, and unanimous, verdict for the scientists, over £500,000 of charitable money has been wasted on such wholesale attempted cruelty to animals as a class. Moreover, three-fifths of that huge sum—much of which might otherwise have gone to good charities such as hospitals—is derived from legacies and their investment. If only the kind-hearted legatees could be made aware of their own unwitting cruelty to animals much of this waste could be stopped. It is to the medical profession that we must look to enlighten the public on this aspect of animal experiments. The facts in this paper should furnish them with an incontrovertible argument with that vast majority of people who do not subscribe to the opponents' so-called "ethical" contention. This was clearly stated by an opposition witness before the Royal Commission in these words, in reply to question 8636: "I would not have one mouse painfully vivisected to save the greatest of human beings nor the life dearest to me."

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Edmonds, C. R., and Walker, G. K. (1929). *Diseases of Animals in Tropical Countries*, 2nd ed., London.

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THE WATER SUPPLY OF LONDON

REPORT FOR 1937

The report on the chemical and bacteriological quality of the water supply of London during the year 1937, which now appears,[1] has the mournful interest of marking the close of Colonel Harold's brief but distinguished term of office as Director of Water Examinations to the Metropolitan Water Board. When he was granted sick leave in May of last year much of the report was still in draft. Through his lamented death in the following July the work remained unfinished, and the task of its completion was committed to the hands of Mr. Denison B. Byles, the deputy director. Mr. Byles, who pays in his preface a feeling tribute to his principal and modestly claims indulgence for his own handling of the material, has discharged his responsible duty in a highly competent manner.

The total average output from the waterworks in 1937 was 310.79 million gallons a day, of which amount 304.97 million gallons were supplied to consumers at an average standard of purity of 99 per cent. All the 127 works units, which derive water from a variety of sources, maintained under normal conditions a 100 per cent. standard, any slight fluctuations occurring only when season or temperature called for some readjustment of the chlorine cover. The filtered supply, all of which is now chloraminated terminally, surpasses in its perfection even the Kent wells. In the last two years the total water supply has increased by 30 million gallons a day. The number of water samples examined in 1937 was 38,000, of which 22,000 were routine bacteriological.

[1] Thirty-second Annual Report on the Results of the Chemical and Bacteriological Examination of the London Waters for the Twelve Months ended December 31, 1937. By Lieutenant-Colonel C. H. H. Harold, O.B.E., M.D., Ch.B., D.P.H. London: P. S. King and Son, Ltd. (10s. 6d.)

Tests for Purity

Ever since the bacteriological examination of London water began MacConkey's bile salt broth has been the staple enrichment method for *Bacillus coli*. Recently, brilliant-green broth has been advocated in America, and claims have been advanced also on behalf of methylene-blue brown-cresol purple broth—the Dominick Lauter medium. Comparative tests of the three methods were carried out on London water throughout 1937. In casting up results at the close of the period the conclusion was drawn that MacConkey's broth was in general not inferior to the other two media. For stored water it actually proved to be the most sensitive, an important point in view of the notable part played by storage in the purification of Thames water. For filtered waters brilliant-green broth had a slight advantage, while the Dominick Lauter medium served to inhibit certain types of false *B. coli* presumptives. As a second string to MacConkey's method brilliant-green broth is to be preferred. Other problems investigated during the year were the use of Koser's citrate in subculturing from raw water, and the nitrogen cycle in its relation to the production of algae.

The effluent from Epping sewage works, which is received into Cobbin's Brook, is still a possible danger to the metropolitan supply. It first attracted attention owing to an outbreak of paratyphoid fever in 1931 and has continued under notice since. In 1937 a number of samples from the effluent were found to contain *Bacillus paratyphosus* B.

Bacteriology of Underground Waters

It is noted that in the Lee Valley area there are two distinct classes of deep wells—those protected by beds of clay above the chalk and those not so protected. The former class are of a high bacteriological grade, and if at any time they fall below standard they are chlor-aminated before delivery to consumers. The latter class are not used as direct sources, but are pumped into the New River to undergo purification along with the river water. The concluding article of the report is an interesting study of the movements and bacteriological condition of such underground waters. In Hertfordshire easterly from St. Albans there is a tract of country from which under normal conditions no visible outlet exists for surface water. After heavy rain the storm waters, becoming sewage-charged in their course, disappear down swallow holes, as they are called, at North and South Mimms. With the view of tracing the course of these subterranean streams fluorescein was put into the channels converging on the swallow holes, with the result that within periods ranging from three days upwards the dye showed green ten miles away to the east in springs and wells which contribute their waters to the New River. It was observed also that heavy rain raised the bacterial content of these water sources, and, further, that the *coli-aerogenes* strains recovered at such times from the polluted springs and wells were of the same type and distribution as in the sewage-charged water which had plunged down the swallow holes.

It was thus demonstrated that the swallow holes at North and South Mimms act in such a manner as to convey contamination by an underground route to the Lee Valley wells and springs. The original pollution is attenuated to some extent as it makes its way through the chalk, but none the less it adds appreciably to the bacterial load of the New River and so implies a potential hazard to the water supply of London. This hazard will tend to increase as the area in question becomes developed and housing estates are formed or factories built, and attention is directed to the utility, in the case of such fissured chalk formations, of chlorinating contaminated surface water *en masse* before it takes the plunge.

The report presents an impressive picture of the endless train of scientific procedures which testify to the unsleeping vigilance of the London water guard.

SPANISH REFUGEES IN FRANCE

BRITISH RED CROSS REPORT

Major-General Sir John Kennedy recently visited the refugee camps and hospitals for Spaniards in the Pyrenees as the personal representative of Sir Arthur Stanley, chairman of the Executive Committee of the British Red Cross Society. The task which confronted the French authorities, Sir John Kennedy explains, was one of unprecedented difficulty. The French Red Cross is an integral part of the war machine, and a perplexing international situation made it virtually impossible for the French Army to place personnel, barracks, or medical reserves at the disposal of the refugees. Practically no separate civil organization existed. Everything had to be improvised. France was warned to expect 50,000 refugees; actually 300,000 have crossed the frontier, and more are still arriving. The strain upon the financial resources of the French is severe. Civilian refugees are being dispersed over France. Families have been separated and children lost, but everything is done by way of broadcasting and the publication of leaflets, bulletins, and lists to effect family reunions. More serious problems are presented by the care of the wounded and the sick, and by the internment of many thousands of former combatants in the Spanish Civil War.

The French Effort

Included in Sir John Kennedy's tour of the refugee area were visits to a former war-time hospital in Toulouse, a civil hospital and two improvised hospitals in Perpignan, and two ships in Port Vendres which have been transformed into hospitals. The war-time hospital in Toulouse, long disused, has been re-equipped and is very well run, though it needs beds, blankets, and other necessaries. The patients are also overcrowded. The resources of the civil hospital in Perpignan have been supplemented with tents, an empty convent, and half the accommodation of an orphanage.

In these hospitals some eleven thousand wounded and sick men are being nursed. Among them are many suffering from tuberculosis, typhoid, venereal and other diseases. The men lie packed together: some on stretchers, some on straw, a few on good iron bedsteads. Some are naked. Every effort is made to cope with what are still entirely inadequate sanitary and washing arrangements. Operating theatres have been improvised. The work for doctors and nurses is appallingly heavy and done under terrible conditions. In an effort to cope with a baffling situation it was suggested that the whole of Vichy and its hotels should be taken over. The expense, however, would have been prohibitive and the interference in the lives and occupations of the inhabitants unjustified.

The situation, though difficult, is well controlled by M. Rucart, the French Minister of Health. He and his collaborators are confident that the situation will remain well controlled providing they receive adequate and prompt supplies of beds, blankets, linen, and shirts. Their chief anxiety, however, is to provide more accommodation for isolating epidemic cases and for the convalescence of the wounded and the sick, who must otherwise return to the internment camp. A clear-cut solution, and one especially welcomed by the French Government, would be the provision of a fully equipped British hospital ship. It would substantially relieve the present overcrowding of the available hospital.

As a soldier Sir John Kennedy praises the resource of those who were able to deal with such a formidable problem by organizing at short notice with great lack of staff and material the camps which he visited at Argeles and St. Cyprien. An enormous number of men crossed the frontier without formation or leaders, in a state of demoralization and nervous excitement, with arms and bombs in their possession. They were brought under control, and they did no damage to the country or its inhabitants.

State of the Camps

The camps are bounded by wire fences as a necessity. No commander would take the responsibility of letting loose two hundred thousand men nearly all of whom require physical or mental rehabilitation. The camps are on dry sand with the sea on one side and the mountains on the other. The air is good and the men are dry. Food is good and plentiful, though the cooking arrangements are still rudimentary. Some huts have been erected and more are being built. The men are separated into divisions, each centred on a hospital hut. Sanitary and washing arrangements are still far from perfect; men rely for these arrangements at present chiefly on the sea, which is unfortunately tideless. Good water has been found; it is supplied by pumps and chlorinated. As the water is only a few feet down there is a danger of contamination by seepage.

Many visitors may have been shocked to see men living in sand-holes covered with blankets. But this is not a normal situation; it is an army in retreat, and many armies under these circumstances have lived under much worse conditions. As a temporary expedient for this enormous mass of men it is difficult to think of a better arrangement. The chief danger is from the outbreak of an epidemic. It is essential to get the men clean, and washing apparatus, especially shower baths, would be of immense value. It is, however, useless to wash a man and not his shirt. Shirts and linen are needed for clothing at least one hundred thousand men. Suspicious cases must be isolated immediately. For this purpose a ship capable of holding at least 600 beds would be extremely helpful.

The camps, the report adds, provide a splendid temporary solution, but it is impossible to contemplate any long incarceration of so large a number of men. "Discipline will become difficult and distraction essential as these men get restored to health and vigour." In conclusion Sir John Kennedy pays a tribute to the ladies of the French Red Cross. "Brave, clean, smiling, efficient in the midst of so much sullen grime, sickness, and misery, they are of enormous value in the physical recovery of these men."

TOXIC GASES IN INDUSTRY

The Department of Scientific and Industrial Research has issued two further leaflets in the series describing standard methods for the detection of poisonous gases produced in industrial processes. These deal with sulphur dioxide and benzene vapour respectively. In the leaflet on sulphur dioxide (Methods for the Detection of Toxic Gases in Industry, Leaflet No. 3, published by H.M. Stationery Office, 2s. 6d. net) it is pointed out that the situations where this gas may be encountered in possibly dangerous concentrations include bone and glue works, cold-storage and refrigeration plant, dye-making, dyeing and bleaching works, glass and pottery works, ore roasting (metallurgical works), petroleum refining works, rubber works, sulphuric acid works, and tanneries. It is also encountered in fumigation and disinfection. A concentration by volume of one part in 2,000 is dangerous for even short exposures, and one part in 100,000 is the maximum concentration allowable for several hours' exposure. Benzene, or benzole as it is often called commercially, is dealt with in Leaflet No. 4 (H.M. Stationery Office, 3d.). Benzene vapour is produced during the manufacture of coal gas and the distillation of coal tar. It may be encountered in dangerous concentrations in many industrial situations. In high concentrations benzene vapour acts as a narcotic (acute poisoning). In low concentrations over a prolonged period it affects the blood and the blood-forming organs of the body (chronic poisoning). Individual susceptibility is well recognized, women and young persons being particularly liable to suffer from chronic poisoning. Analyses of air in factories where poisoning has occurred give values ranging from 1 in 200 to 1 in 500 parts of benzene.

A foreword to the leaflets explains that a paragraph of the Chemical Works Regulations, 1922 (made under Section 79 of the Factory and Workshop Act, 1901), prohibits entry into any place which might contain dangerous gas by any person not properly protected until the air has been tested and found safe to breathe. To meet this requirement the question of simple and rapid chemical or other methods for determining low concentrations of dangerous gases, such as may occur in various circumstances in industrial works, was discussed by the Association of British Chemical Manufacturers with the Home Office, and as a result arrangements were made by the Department of Scientific and Industrial Research, at the request of the Home Office and with the financial and technical co-operation of the Association of British Chemical Manufacturers, for a series of tests to be developed by the Chemical Defence Research Department. The programme allows for a complete series of tests dealing with the following gases and vapours: aniline, arsine, benzene, carbon bisulphide, carbon monoxide, chlorine, hydrogen cyanide, hydrogen sulphide, nitrous fumes, organic halogen compounds, phosgene, and sulphur dioxide. Although this series of tests has been worked out mainly from the point of view of the chemical industry, the gases and vapours in question are encountered in many other industries, to which the tests should be useful.

Nova et Vetera

SIR WILLIAM STOKES, 1839-1900

That a father's world-wide reputation need not embarrass a son's ambitions but may even advantageously tincture his career is convincingly shown in the story of Sir William Stokes, the centenary of whose birth occurred on March 10. Second son of "Stokes of Dublin" of the young mind, whose life he wrote for the *Masters of Medicine* series in 1898 and whose memory is kept green by the eponyms "Stokes-Adams disease" and "Cheyne-Stokes respiration," the whole of Sir William's professional life was associated with Dublin, upon whose school of surgery he shed such lustre. It was his appointment in 1868 as surgeon to the House of Industry Hospitals (including the Richmond Surgical Hospital) which gave him the opportunity for brilliant and highly successful operative work. At one time he was known as Ireland's finest clinical teacher in the Socratic manner, distinguished by the accuracy of his knowledge, the forceful lucidity of his exposition, and his genius for conciseness and simplicity. An early advocate of Listerian principles, his most original contribution to surgery was a method of amputation at the knee, which is known by his name and which was an improvement on that of Gritti of Milan. A consummate artist in the English language, his oratorical gifts found their highest expression in his address on surgery at the jubilee meeting in 1882 of the British Medical Association. His countrymen, enthralled by the charm and sympathy of his voice, were apt to compare him with Sir James Paget, whom he eclipsed in the Irish grace of humour. The one great relaxation of this cultured man, delightful host, and superlative linguist was music. In 1886 Stokes became President of the Royal College of Surgeons in Ireland, and six years later surgeon-in-ordinary to Queen Victoria in Ireland. Consulting surgeon to the British Field Force in South Africa, he died of pneumonia, complicated by chronic nephritis, in the base hospital at Pietermaritzburg, Natal, on August 18, 1900. His health, never robust, had been undermined by overwork.

The first annual report of the Red Crescent Hospital, Cairo, is largely devoted to the treatment of fractures, reflecting the great importance of dealing with labour accidents in the most efficient manner. The Red Crescent Society realized the growing need in Cairo for a hospital where the necessary care of the injured would be assured, and the hospital opened on July 1, 1937, with fifty-six beds. New buildings now under construction will accommodate 125 beds.

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HEALTH AND NUTRITION IN INDIA

From the point of view of physique and health no peoples of the world provide more striking contrasts than do those of India. On the one hand there are races of the north whose physique and health are excellent; on the other there are races of the south, east, and west whose physical endowment is of the poorest and among whom disease is rife. The dominant factor in the production of these differences is food—a fact made clear by the researches of McCay and McCarrison. Those races whose diets are made up for the most part of whole cereal grains, legumes, milk and its products, green leaf and root vegetables, fruit, and meat in moderation—"the protective foods," now so called—are of fine physique and enjoy good health, provided the foodstuffs are fresh and produced on soils that are not impoverished. Those whose diets are made up for the most part of denatured foodstuffs, such as polished rice, with little or no milk, milk products, meat, fresh vegetables and fruit, are of poor physique and subject to disease in great variety of form. Millions of the Indian people come within the latter category. For many of them the problem is not only to obtain enough food of the right kind but to obtain enough food of any kind. Poverty is the chief cause of their unhappy state; and many factors—agricultural, economic, social—are responsible for their poverty. It is only by the elimination of these factors that the problem of malnutrition can be solved. In his recently published book, *Health and Nutrition in India*,[1] Dr. N. Gangulee, formerly professor of agriculture and rural economy, University of Calcutta, and ex-member of the Royal Commission on Indian Agriculture, has exhaustively examined these factors, demonstrated their baneful influence under existing conditions in India, pointed out the reasons for this influence, suggested means whereby it may be abated, and indicated some of the steps that must be taken to solve the problem of malnutrition. His own countrymen have now assumed responsibility for government, and have undertaken to shape "a national policy, based on directed economy, for the rehabilitation" of India. It is to them that he appeals; and in particular to leaders of the Indian National Congress. In order that nothing may be lacking for their complete understanding of the urgency and complexity of the problem facing them he provides a detailed account—too detailed, sometimes—of the newer knowledge of nutrition, of the consequences of dietary deficiencies, of Indian foodstuffs and Indian dietaries, and of research on nutrition both in India and elsewhere. He insists, and rightly, that a first principle of good government is the adequate provision of food for the people—a principle to which few Governments accord a primary place in their policies. In this connexion he quotes from an eloquent speech by the present Viceroy of India, Lord Linlithgow—than whom few heads of Governments have a greater knowledge and understanding of the importance of food in determining man's general physical endowment, powers of endurance, and resistance to disease. The occasion was the inauguration of a scheme for the provision of milk to Indian school children, when the Viceroy said: "What, indeed, is the use of spending public funds on objects such as education, welfare schemes, and the like if the people have not the health and vigour of mind and body to take full advantage of them and to enjoy them? What, indeed, can we hope from a political constitution unless we apply ourselves without delay and with persistence, vision, and courage to the improvement of the physical condition of the common run of man and woman?" Here is a challenge to Governments everywhere, that at home as well as those abroad.

Space permits no more than a brief enumeration of the measures deemed by Dr. Gangulee to be essential for the conquest of malnutrition in India. They include the overcoming of that inertia which afflicts so many of the masses in India and of that spirit of complacency which afflicts so many of the privileged classes; the reorganization of agriculture, the application to it of scientific principles, the maintenance of soil fertility, and the proper use of farmyard manure and composts made of vegetable and other wastes; the increase in acreage of food crops at the expense, if necessary, of non-food crops; the introduction of new food crops, such as soya-bean and lucerne; the extension of horticulture and the much greater production of vegetables and fruits; the reorganization and development of the fishing industry; and, above all, the greatly increased production of milk and milk products. To these he adds research, education, propaganda, and efficient distribution of food. By these means poverty, ignorance, apathy, maladjustments in economic life, age-worn social customs, sins of commission and of omission in the production, distribution, and consumption of food, would be—if not wholly eradicated—greatly lessened, and

[1] London: Faber and Faber. (15s.)

in consequence the health and happiness of the people of India increased out of all recognition. Measures such as these have an obvious applicability to our own country as well as to India.

Dr. Gangulee has some hard things to say of British rule in India—too hard, as some who have spent their lives in the service of India may think. For him the dawn of a new day in government of the Indian people brings with it the hope that where in his view Britons have failed Indians may succeed. Should they fail it will not be his fault; for he has produced for them a guide, made possible to a considerable extent by the work of Britons in India, which they may safely follow. His book is a monument to his own industry and to his love for his country. Sir John Orr has written an excellent foreword to it, in which he correlates the problems of malnutrition in India with those of the world as a whole. We commend the book to those interested in the relations of nutrition to health and in the well-being of India, though we think that had it been less lengthy it might have served its purpose better.

BLOOD GROUPS AND THE HOUSE OF LORDS

The House of Lords, in debating the Second Reading of Lord Merthyr's Bastardy (Blood Tests) Bill on February 8, showed an unexpected interest in and sympathy with his project. In many Continental countries, and in one or two of the United States of America, the judicial use of blood group tests to decide paternity disputes is no novelty. In this country it is about ten years overdue, partly because we are as a nation rather slow to adopt scientific discoveries, and partly because our legal system is very tender towards the liberty and person of the subject. This Bill does not propose to interfere with either. It is framed on the assumption that, in proper hands, blood group tests can exclude from suspicion of paternity one man in every three who are not really the father. It provides that when a woman is claiming affiliation money for an illegitimate child under the Bastardy Acts the court may require her, with her child and the man, to undergo blood tests to see whether the man can be excluded. If the man demands the test the court must order it, but he may have to pay the costs. If the woman will not submit to the test the court must dismiss her application. The tests must be carried out by medical pathologists who have satisfied the Lord Chancellor of their competence, in accordance with rules to be drawn up by the Lord Chancellor and approved by Parliament. The Bill gives the Lord Chancellor's Department a practically free hand to make regulations which will ensure that the tests are carried out under first-class conditions. In order to cut down costs the evidence of the pathologist may be given by certificate only, like the evidence of a public analyst in a prosecution under the Food and Drugs (Adulteration) Act, 1928. The court would have wide discretion to award costs against the parties, and to order the cost of the tests to be paid by the local authority as though they were costs of defending a poor person accused of a crime.

The opinion has been expressed that the time is not yet ripe for such legislation and that magistrates and the public should be made more familiar with the possibilities of the tests. It is difficult to see how this could be done in any other way than by actually using the tests, and the courts can only use the tests to any appreciable extent if legislation is passed to permit them to do so. Members of the Magistrates' Association have already been made familiar with the subject by articles in *The Magistrate;* several articles have appeared in the legal papers, and publicity in the lay press has already gone as far as the present scope of the tests will allow. The speeches of their Lordships unmistakably indicated a strong demand for the Bill. Viscount Dawson of Penn, speaking as an expert adviser, said that the scientists of the whole civilized world used the tests, that the taking of the samples is a trivial business which doctors do every day in the ordinary course of their work, that every first-class hospital has facilities for performing the test, and that five people sitting round a table could draw up a perfectly satisfactory scheme of rules in half an hour. He thought that the delay in adopting the tests by legislation was rather a slur upon both the medicine and the law of this country, and declared that the Bill had the support of the scientific world. Lord Raglan welcomed the Bill because he thought it would do much to put a stop to cases of deliberate perjury. There is plenty of evidence that these are not at all uncommon, and that men, to use an Americanism, are often "railroaded" on the utterly fictitious evidence of the girl and her mother. Lord Raglan pointed out that if the Bill became law it would admit scientific evidence of the same quality as that which the law admits every day in the trial of charges of murder, rape, forgery, and burglary.

Lord Atkin supported the Bill not only as a veteran jurist but also as a magistrate and as a past-president of the Medico-Legal Society. He said, as most other magistrates say, that these cases give the Bench the greatest anxiety, and that it would be a great relief to know that the facts can in some cases be proved quite conclusively. He could not think that the Bill ought to be rejected merely

because the test will only exclude one-third of the men who ought to be excluded, or is only applicable in a small proportion of cases. He thought that even if the test would show in only a very few cases that the man was not the father, it would be an immense addition to the equipment of justice. He doubted whether a case ought to be dismissed merely because the mother refuses the test, but this is, as he remarked, a committee point.

The only opponent of the Bill was Lord Gorell, speaking for the National Council for the Unmarried Mother and Her Child. In order that the Council might know precisely what was proposed, Lord Merthyr addressed a meeting of members on the Bill last summer. In spite of this knowledge, said Lord Gorell, his Council still did not think the time ripe. He thought that the mere admission of the possibility of a mistake was a decided argument against passing the Bill. He understood that those really qualified to conduct the tests were very few, and that therefore there would either be great delay or tests would be done by persons not fully competent. He also complained that the Bill was framed from the man's point of view and would not help the woman.

The Lord Chancellor, Lord Maugham, speaking for the Government, said he was quite willing that the Bill should have a second reading on condition that it went to a Select Committee. With his highly trained skill in criticism he proceeded to formulate a few of the difficulties which will have to be met. An obvious one, of course, if the man is to be allowed to have a test for the asking, is that men who really have no defence may cause unnecessary delay and expense by demanding a test as a forlorn hope. The promoters of the Bill are doubtless perfectly aware of the possibility, and it must be balanced against the need for putting pressure on that small minority of Benches which will refuse on principle to have anything to do with novel and scientific evidence. He said that eminent pathologists who had been advising the Home Office had suggested that a result showing exclusion should be checked by another laboratory with fresh samples. He did not express an opinion whether that was really a necessary precaution, but thought that a mere suggestion of the sort by eminent pathologists was enough to lead to the conclusion that the first test might be doubtful.

With great respect it seems to us that the Lord Chancellor was making far too much of what was probably a merely theoretical suggestion. At least one of the eminent pathologists who advise the Home Office has stated publicly and repeatedly that this test, in the hands of a competent and experienced person, is as reliable as any other form of scientific evidence, and that a check performed by a colleague in the same laboratory is amply sufficient. The need for an independent check by another institute would perhaps cause some delay and expense. Even so, it would not necessarily be by any means an insuperable obstacle. Lord Maugham also looked askance at the innovation of throwing upon public funds the cost of tests in civil proceedings; and the possibility of conscientious objection by mothers to having blood taken from themselves or their children. To the first point, which is possibly of far more weight than the second, one answer is surely that the proceedings are more analogous to criminal than to civil proceedings and that a just outcome of them is more nearly the business of the community than is, for example, that of a running-down case. Bastardy cases really occupy a unique position in the courts, and their peculiarities ought to be considered objectively. On the second point it is to be hoped that nothing will be done either in Parliament or outside to open the door to groundless conscientious objection. The proper view is surely that, as the woman is asking for a large amount of money, she has no right to withhold any evidence that may be relevant to the Bench's decision.

The whole matter is now in suspense until the Select Committee of the House of Lords issues its report. It is for the promoters of the Bill to produce such evidence as will convince the Committee that the Bill should proceed. Even if the Committee stops the Bill, much will have been done to answer the many difficult questions which hinder the judicial use of blood tests, and to make magistrates and the public familiar with its advantages and difficulties.

JUBILEE OF THE L.C.C.

The London County Council, which was created by the Local Government Act, 1888, held its first meeting, under the chairmanship of the late Lord Rosebery, on March 21, 1889, at the Old County Hall, Spring Gardens. To celebrate its jubilee the Council is holding a special ceremonial meeting at the County Hall on Tuesday next, when distinguished guests connected with London's local government will be present. Queen Mary will open the Jubilee Exhibition at the County Hall at 11.45 a.m.; with her will be the Princess Royal. On Wednesday, March 22, the Council will be honoured by a visit from the President of the French Republic, accompanied by Mme. Lebrun, who will attend a special reception at the County Hall and will be presented with an address of welcome. On March 27 the City Corporation will entertain the Council at an evening reception at the Guildhall. This is of particular interest in the jubilee year because for the Council's first year of existence it enjoyed the

hospitality of the Guildhall, where the majority of its meetings were then held owing to the inadequate space at the Old County Hall. H.R.H. the Duke of Kent will review the London Fire Brigade and Auxiliary Fire Service in Hyde Park on the afternoon of Saturday, June 3, as part of the jubilee celebrations. Other ceremonies will be held from time to time during the next six months, including the opening of Maudsley Hospital Extension. The area and the population of the Administrative County of London are now practically the same as in 1889, but the Council's powers and duties have increased enormously. When it was created the chief powers of the L.C.C. were: main drainage, street improvements, bridges and tunnels, fire brigade, parks and open spaces, mental hospitals, housing—in a very limited form. To these powers many have since been added, the principal additions being education, public assistance, hospitals, town planning, midwives, ambulances, welfare of the blind. The Council's early powers in regard to health services, housing, licensing of places of public entertainment, public protective services, etc., have been greatly enlarged. The personal nature of the service it now renders to the people of London is indicated by the fact that 36 per cent. of its expenditure is devoted to education, 17 per cent. to public health matters, including hospitals, 13 per cent. to housing, and a similar percentage to public assistance. Every effort is being made to present in the Jubilee Exhibition at the County Hall a complete and vivid picture of the L.C.C.'s services to-day. Nearly thirty rooms are being devoted to the exhibits.

OVERT AND ILLICIT TRAFFIC IN NARCOTICS

The last report of the Permanent Central Opium Board reviews the progress made during the ten years of its existence in the control of international traffic in narcotic drugs, while the recently published estimate of world requirements of narcotics in 1939, issued by the Supervisory Body set up under the Limitation Convention of 1931, shows the stabilization of the amounts of the scheduled drugs needed for medical and scientific purposes. Both documents serve to confirm the conclusion that, while the control of the licit production is regularized, illicit production of dangerous drugs and traffic in them still flourish. The report made to the Assembly of the League of Nations by its Seventh Committee last September fully justifies the policy consistently advocated by this *Journal* for many years—that "final success requires that the existing League machinery should be supplemented by a limitation and control over the production of raw materials, particularly those serving for the manufacture of morphine and its derivatives, which would make it possible to suppress the abuse of narcotic drugs." The Assembly was informed by the British delegate of the terrible situation of the drug traffic in the Far East, especially in Manchuria and Jehol. In the 181 cities in those districts it was stated that there were no fewer than 3,840 licensed opium saloons and 8,400 licensed heroin dens. According to the Chinese delegate the Japanese had taken advantage of their incursion into Chinese territory to spread drug addiction among the Chinese population. The preparatory work for a conference to consider the limitation and control of the production of raw materials is making slow but, it is to be hoped, satisfactory progress. The report by the British *rapporteur* of the Seventh Committee informed the Assembly that "about 300 tons of raw opium are required each year for the world's medical needs. About the same quantity is required to supply the present needs of opium-smoking monopolies; about 500 tons are also required for other non-medical consumption. But the annual production of opium far exceeds these figures. Excluding Afghanistan, China, and 'Manchukuo,' the present production is about 2,300 tons; with the addition of stocks the alarming total of about 6,000 tons is reached." The Permanent Central Opium Board speaks of "tens of thousands of drug addicts" who derive their supplies mostly from clandestine factories. It does not hesitate to say that "immense quantities of opium are produced yearly for which there is no legitimate demand," and that "until the quantity of opium produced throughout the world is reduced to the amount needed for legitimate purposes the illicit traffic will continue."

NARCOSIS THERAPY IN PSYCHIATRY

Narcotics may be employed in psychiatry for three different purposes. They are of the greatest service, and are in fact indispensable, for the treatment of the immediate symptom—restlessness, excitement, or insomnia. Insomnia is one of the earliest as well as one of the most intractable symptoms of nervous upset, and its adequate treatment will often afford relief apparently disproportionate to the amount of disturbance. In any psychiatric hospital in which a large number of acute cases are being treated the amount of narcotics used for this purpose is enormous, as most patients require some help with their sleep. Large doses of narcotic drugs are also given in the daytime for the relief of excessive excitement or agitation and to prevent the consequent exhaustion. This symptomatic prescription of narcotics has led to their employment as a specific remedy. A sufficient amount of one or of a combination of drugs is given at regularly repeated intervals to secure a state of somnolence throughout the twenty-four hours for about a fortnight on end. This is the so-called continuous narcosis or sleep treatment of psychoses, and many workers have obtained striking results with it in a variety of syndromes, but particularly in agitated types of melancholia. On waking from the prolonged sleep it is sometimes found that the agitation has subsided for good, and that many distressing preoccupations and even delusions have faded into the background. In a review of this aspect of narcotic treatment R. D. Gillespie[1] comes to the conclusion that its effects are most clearly seen in a shortening of the illness, particularly in cases both of a manic-depressive and of a schizophrenic type which are of

[1] *J. Neurol. Psychiat.*, 1939, **11**, 45.

recent and acute onset and show marked excitement. There is no convincing evidence that the treatment actually brings about recovery in cases that would not have remitted spontaneously. A third and still more interesting employment for narcotic drugs is as a means to a different and unrelated end. It has been found that in inhibited and retarded or in mute and unresponsive patients, such as those in catatonic stupor, an injection of sodium amytal will bring about a temporary but very marked dis-inhibition. The stuporous patient wakes up and talks readily, and though maybe he will still show the grossest symptoms of a frankly psychotic disorder he will co-operate readily in a psychiatric exploration that otherwise would not have been possible. Some hospitals give a regular injection of the drug at meal-times to avoid tube-feeding in a patient ordinarily so resistive as to make such a measure necessary. A. M. G. Campbell[2] provides an interesting note on the use of sodium evipan in a somewhat different but related way. As early as 1924 Schilder[3] was working on the use of a variety of narcotic drugs to produce hypnotic states, and particularly for the investigation of functional amnesia. In using evipan for such psychotherapeutic purposes it may be given by continuous drop-by-drop intravenous injection over a considerable time to maintain a heightened degree of suggestibility without actual loss of consciousness. In this way a sort of artificial hypnosis may be obtained in patients otherwise resistant. Such a technique may be used for the deeper exploration of the circumstances which have precipitated a breakdown, and also to facilitate a suggestive form of psychotherapy. Dr. Campbell found, however, that a number of patients proved resistant also to this type of attack, and it seems likely that nothing was got in this way that might not have been obtained at length, though perhaps more laboriously, by more ordinary methods.

POPULATION AND FERTILITY

The pamphlet with this title recently issued by the Population Investigation Committee is the work of Mr. D. V. Glass and Dr. C. P. Blacker.[4] It gives a clear account of the statistical methods of measuring fertility, of the history of vital registration and census taking in England and Wales, and of the structures of the populations in several countries. In a special chapter attention is directed to the possible value of voluntary inquiries in obtaining information which is beyond the reach of official enumerations. Those medical men who have given serious attention to demography may not find anything particularly novel in the pamphlet, but should be grateful for a compact summary of all the relevant facts. The authors' account of the controversy of 1937–8 on the Population (Statistics) Bill and its practical outcome is judicious, but a sentence on page 38 may be interpreted by a lay reader to mean that it has not been the English practice to record the occupations of decedents on death certificates. The informant has long been required to supply the registrar with particulars of the occupation of the deceased (if the deceased were a wife or widow, the occupation of the husband). It is precisely because this has long been the English practice that our occupational mortality analyses are so valuable. The pamphlet ends with a chapter on possible counter-measures. This, like the rest of the book, is written carefully and unrhetorically. To say that " conditions would be created in which people would want to have children and would have them deliberately and gladly " is not to throw a flood of light upon the situation but it is to state the exact truth. Since the actions of all and the words of many of the " civilized " Governments of the world seem designed to perpetuate conditions of life to which no humane person could desire to expose children, it does not seem likely that the authors' aspiration will be quickly realized.

[2] *Guy's Hosp. Rep.*, 1938, **88**, 185.
[3] *Arch. Psychiat., Nervenkr.*, 1924, **72**, 326.
[4] *Population and Fertility.* By D. V. Glass, B.Sc., and C. P. Blacker, M.D., F.R.C.P. London: The Population Investigation Committee. (3s.)

PROTECTION AGAINST EYE ACCIDENTS

" No one has yet produced an artificial eye which can see." So begins a leaflet issued by the Chief Inspector of Factories of the Home Office.[1] The statement is true; it places eye accidents among the most serious of non-fatal industrial accidents. It is known that about 10 per cent. of the blind in this country are blind because of industrial eye injuries, and it is calculated that the number of such eye accidents exceeds 100,000 yearly. The suffering and waste caused by these are incalculable. Accidents are caused by the entry into the eyes of dust, flying objects, splashes of molten metal and caustics, and exposure to intense glare as in welding. These accidents can be prevented. Protection by screens, masks, helmets, visors, or goggles can be adapted to almost every form of work. Fixed screens are particularly suitable, for they protect not only the worker but also his neighbour. Hand screens are needed for welding. Sometimes where two-handed work is required the screen is better fitted into a mask or helmet. Screens are usually less irksome to wear than goggles, because the ventilation is better. Goggles, if the right sort are chosen with safety glass and side-pieces, are invaluable. Celluloid is less likely than glass to become fogged; it is cheap and light, but is easily scratched. There is an excellent display of protective appliances in the Home Office Industrial Museum, Horseferry Road, London, S.W.1. The Royal Eye Hospital in London also has a good display, and every ophthalmic hospital in the country might well follow this example. Attention is called in the leaflet to the need for regular examination and maintenance of protective appliances. Failure to do this is one of the reasons why some workmen dislike them and risk their precious eyesight rather than use them. Works doctors in making an appeal to the men in their charge might well stress the responsibility of the individual workman not only for his own safety but also for the economic security of his wife and children. The latter appeal is often stronger than that of self-interest.

[1] Factories Act, 1937. Form 1987, December, 1938. Protection Against Eye Accidents. London: H.M. Stationery Office. (1d.)

THE APOCRINE GLANDS

As early as 1846 an American anatomist, W. E. Horner, noticed that there were certain sweat glands in the axilla differing in many respects from the sweat glands found in other areas, and that they were remarkably well developed in the negro. His observations were confirmed by others, but it was not until Schiefferdecker investigated them again in 1922 that they were given the name of apocrine to distinguish them from the common type of sweat gland which is known as eccrine, from which they differ in many ways. In the first place they are of a reddish tint instead of yellow and extend more deeply, being found in the subcutaneous tissue; but they are only found in regions where hair exists, and typically the distal end of the sweat duct opens into a hair follicle, although occasionally the opening is found at a little distance from the follicle. Embryologically the apocrine glands differ from the ordinary sweat gland in that they are developed from the sebaceous gland and the hair follicle, while the eccrine type develops from undifferentiated cutaneous epithelium. They do not function until the time of sexual maturity. There seems to be no doubt, according to Way and Mennesheimer,[1] who have made a careful study of them, that they are of definite sexual significance and that they contribute much to the characteristic individual odours of their possessors; as Horner in his original paper on the subject noted, they are especially well developed in the negro race, the smell of which is undoubtedly characteristic. Most of the work on these interesting structures has been done since Schiefferdecker's paper in 1922. It has been found that they occurred not only in the axilla but also on the mons veneris, the anus, the abdomen, and round the nipple, and it is thought that they are much better developed in women than in men, and though they do not appear until puberty they undergo no involution in old age. Their secretion differs a good deal from ordinary sweat in that it contains cellular granules and not merely fluid droplets. It is less acid and contains iron. The presence of iron has been confirmed by Way and Mennesheimer,[1] who used Mallory's potassium ferrocyanide test; it may here be added that they found no iron in axillary tissue derived from five infants in which the eccrine type of gland alone was present. They therefore conclude that the apocrine glands deserve to be classified as accessory sexual glands, and that the excretion of iron and possibly of a cholesterol is characteristic of them.

[1] *Arch. Derm. Syph.*, 1938, **38**, 373.

CHANGES IN STOMACH AFTER FOLLICULIN

Long-continued administration of oestrogenic hormones in massive doses produces conspicuous pathological changes in laboratory animals. The action on breast tissue is well known. Hyperplasia and squamous metaplasia occur in the prostate, and endocrine glands undergo important changes. Loeb and his collaborators have described gross hyperplasia of the epithelium of the vagina and of the cervix uteri, and in a recent paper[2] recorded a smaller degree of hyperplasia and squamous metaplasia of the epithelium of the body of the uterus. The experiments have been carried out mostly on mice and rats. Pierson,[3] using rabbits, observed hyperplasia of mammary tissue and atypical overgrowth of the uterine mucosa with tubular and solid epithelial tissue, extensive squamous metaplasia, and the formation of cartilage and bone; the proliferating tissue infiltrated the uterine wall and extended beyond it. In one rabbit which had received injections of folliculin twice weekly for three years the uterus was necrotic and the breast tissue somewhat atrophied, whilst there was a conspicuous thickening of the wall of the stomach. Beneath the unchanged serous surface there was a layer of striated muscle, and between this and the smooth muscle a layer of mamma-like tissue. The gastric mucosa was hyperplastic and there was extensive squamous metaplasia in part replacing the mucosa and in part mingled with it. The interpretation of these remarkable changes is formidable. The provenance of the mamma-like tissue and the cause of its proliferation were not ascertained; no connexion with gastric glands or with epithelial tissue outside the stomach was traced. Pierson suggests that the striated muscle might have developed by metaplasia of smooth muscle as a result of the prolonged action of the hormone, and that the squamous metaplasia of the gastric mucosa, like that of the uterine mucosa, might well be due to the same action. Clearly much more investigation is needed to substantiate these possible extensions of the territory over which oestrogenic hormones are active, but, irrespective of their cause, the histological changes in the stomach are notable.

[2] *Amer. J. Cancer*, 1938, **34**, 413.
[3] *Z. Krebsforsch.*, 1938, **48**, 177.

INTERNATIONAL CONGRESS OF PAEDIATRICS

The fifth International Congress of Paediatrics will be held in Boston, Massachusetts, on September 3, 4, and 5, 1940. As the programme is being drawn up in the near future suggestions for subjects for general discussion should be submitted to the secretaries of the British National Committee (Dr. A. G. Maitland-Jones, 31a, Weymouth Street, and Dr. R. W. B. Ellis, 82, Wimpole Street, W.1) within the next ten days. Members of the British Paediatric Association and of the Children's Section of the Royal Society of Medicine are being circularized with regard to further details of the congress. The programme will include sessions for general discussions and for the delivery of individual papers.

Professor J. A. Gunn will deliver the Oliver-Sharpey Lectures, on "The Pharmacological Actions and Therapeutic Uses of Some Compounds Related to Adrenaline," before the Royal College of Physicians of London, Pall Mall East, S.W., on Tuesday, March 21, and Thursday, March 23, at 5 p.m.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

ANO-RECTAL ABSCESS

BY

SIR CHARLES GORDON-WATSON, K.B.E., C.M.G., F.R.C.S.

When Padua was the great medical centre in Europe there were many well-known anatomists whose names are with us still: Vesalius, Fallopius, Gasserius, and, in connexion with this article, Morgagni. Morgagni studied the anatomy of the rectal outlet. The columns, the crypts, and the papillae, the little sentinels of special sensation which all preserve his name, were objects of his special study, and are closely concerned with the pathology of infection in this region. Now, nearly two centuries later, our knowledge of this region has been advanced by another Morgan and his colleague Milligan and others (1937). Their description, based on repeated dissections of the musculature surrounding the anal canal, has clarified and stabilized the anatomy of this region. A knowledge of this anatomy is essential to a proper understanding of the paths of infection which lead to ano-rectal infection, and so to effective treatment (Fig. 1).

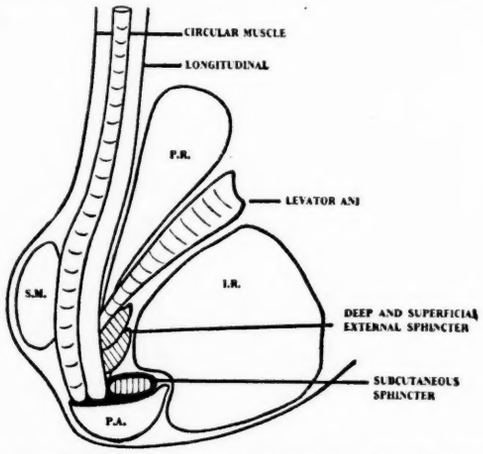

FIG. 1.—Anatomy of the rectal outlet (after Milligan and Morgan). P.R. = pelvi-rectal; I.R. = ischio-rectal; S.M. = submucous; P.A. = peri-anal.

The Origin of Ano-rectal Abscesses

It is customary to consider these under four headings: (1) peri-anal (subcuticular or marginal); (2) submucous; (3) ischio-rectal; (4) pelvi-rectal.

PERI-ANAL ABSCESS

A small superficial abscess around the margin of the anus may be due to an infected hair follicle or sebaceous gland, but more often it can be traced to infection behind a fissure, to a thrombosed external haemorrhoid, or to some trauma at the anal margin. Occasionally a submucous abscess makes its way down to the subcuticular region, and a neglected marginal abscess may spread into the ischio-rectal fossa.

SUBMUCOUS ABSCESS

This is not common. It is usually met with above the anal canal, is seldom large, and soon attracts attention from the pain it gives. The commonest cause is probably a thrombosed internal pile or trauma from a foreign body. An abscess in this situation, if neglected, may occasionally find its way outwards between the superficial and deep portions of the external sphincter to the ischio-rectal fossa, or, by spreading downward, pass between the superficial external sphincter and the subcutaneous sphincter or superficial to the latter, and so form a peri-anal or marginal abscess.

ISCHIO-RECTAL ABSCESS

Most importance attaches to this variety, because the ischio-rectal fossa is the most common site for ano-rectal infection. In many instances an abscess in this situation seems to arise without obvious cause. Tuberculous infection will be considered later, but it is probable that not more than 10 per cent. of the abscesses are due to this cause.

Trauma from within sometimes plays a part. It is not surprising, when we realize the great power of the sphincters that guard the anal exit, that the lining of the canal is sometimes torn by foreign bodies or brick-like faeces as they pass by and that infection follows. It is perhaps a matter for surprise that this does not happen more often. On one occasion a patient came to consultation in great agony and barely able to walk. Excruciating rectal pain had immediately followed defaecation. A rectal examination revealed a stout fish-bone firmly impacted across the anal canal with both ends deeply buried. This was cut in two and the two halves pulled out, and several weeks afterwards I opened up an ischio-rectal abscess on both sides and later carried out radical procedures for the fistulae that followed.

On another occasion, in dealing with an ischio-rectal abscess at St. Mark's in the case of an ex-soldier, I removed a rifle bullet which was embedded in the cavity. This bullet had penetrated the lumbar region some years before and had never been located. A great variety of foreign bodies which have passed down the alimentary tract have been found in abscesses and fistulous tracks. Trauma from without resulting in a haematoma in the loose areolar tissue of the fossa, such as follows a kick or fall, is sometimes responsible for an acute abscess. A boy admitted with a bilateral ischio-rectal abscess gave a history that some weeks previously he slipped when walking along a wall and landed astride it. When these abscesses follow injury there is usually an acute stage which is easily recognized. In other instances, when no apparent cause can be traced and no connexion with the anal canal recognized, the abscess may be insidious in its onset and subacute or even chronic from the start. In some of these a communication with the anal canal does exist and often allows the transition from abscess to fistula to pass unnoticed. The pathology of many such cases has in the past been obscure.

It is not unlikely, however, that some of these abscesses and the fistulae which follow can be explained by infection arising in peri-anal glands, vestigial structures embedded in the muscular coats, possibly once active for sex attraction. Dukes, at St. Mark's, called our attention to the occasional presence of these glands and noted instances of a duct leading from them into the crypts of the anal canal. In two cases under my care and in one under Mr. H. Dodd this origin was definitely established and the transitional lining of the abscess cavities demonstrated (Gordon-Watson and Dodd, 1935). Further evidence in support

of this view of the origin of some of the ischio-rectal abscesses can only be obtained when a case with a track leading into the bowel is operated on early, before the transitional lining of the track has been obliterated by granulation tissue.

For the most part an ischio-rectal abscess, if adequately treated, is not a serious affair, but occasionally the reverse is the case. A man with a septic sore on the face, which had been incised, was later found to be extremely ill, with a temperature of 105° and a pulse of 140; an acute ischio-rectal abscess developed which gave a culture of haemolytic streptococcus. In other instances, happily rare, *Clostridium welchii* takes a hand, and a spreading gas infection is apt to ensue unless early radical measures are adopted. In one instance I met with this condition following acute gangrenous sloughing of prolapsed haemorrhoids which nearly proved fatal. As might be expected, ulcerative proctitis may sometimes infect the ischio-rectal fossa; and, lastly, when malignant disease low down is advanced and ulcerated an ischio-rectal abscess is not an uncommon sequel.

PELVI-RECTAL ABSCESS

Abscesses which form above the levator ani are fortunately far from common. They may arise from injury due to a foreign body in the rectum or from ulceration of the rectal wall, or be due to the spread of some infective condition in the pelvis or around the prostate. I have known a pelvic appendix abscess and a pyosalpinx both give rise to a pelvi-rectal abscess, and these often point in the rectum. On one occasion when draining one of these abscesses a small gauze swab was delivered through an opening in the levator ani. The patient had undergone a pelvic operation some time previously.

Treatment of Ano-rectal Abscesses

It is important not to forget that a fistula is the sequel to an abscess, that a neglected abscess in this region invariably ends in a fistula, and that most fistulae can be prevented if the abscess which precedes it is dealt with promptly and effectively.

PERI-ANAL ABSCESS

A superficial abscess round the anal margin should be dealt with under local anaesthesia. Novocain (2 per cent.) is injected under the skin over the area involved, and after incision enough skin is cut away to allow free drainage. It is wise to make a careful investigation with a director in case there is a communication with the anal canal, either deep or superficial to the subcutaneous sphincter. If the former is the case the subcutaneous sphincter is divided.

SUBMUCOUS ABSCESS

It is advisable to use the diathermy needle in these cases or, as an alternative, to transfix the cavity with a ligature which will eventually cut through, otherwise troublesome haemorrhage may follow. Every bleeding-point must be ligatured. If freely incised no packing is necessary, but a tube should always be inserted through the anus, after the sphincter has been gently stretched.

ISCHIO-RECTAL ABSCESS

An ischio-rectal abscess can usually be recognized by careful bidigital examination. The boundaries of the fossa are laterally the obturator internus and mesially the levator ani and musculature of the anal ring. When operating it is absolutely essential to remove a wide area of skin so as to secure free drainage (Fig. 2). When this has been done tubes and packing are unnecessary and only cause discomfort. If septa exist they should be broken down gently with the finger and curettage avoided. A careful search is made for any opening into the anal canal. If one exists, on no account should the musculature superficial to it be divided at this stage, unless only the subcutaneous sphincter is involved. The track can easily be located later if a silk ligature is passed through it and out through the anus and loosely knotted outside. After a wash-out with peroxide some bipp is spread on a layer of gauze and the cavity lightly dressed with this. Hot fomentations are then applied for forty-

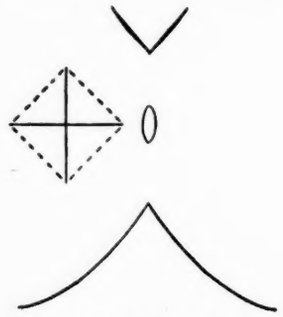

FIG. 2.—Illustrating a crucial incision for ischio-rectal abscess. The skin flaps should be excised back to the dotted lines.

eight hours or so. At the end of forty-eight hours the gauze is removed and the cavity irrigated daily with saline, or eusol if the pus is offensive, until healed. After the first few days the patient is allowed to sit in a bath daily. At the end of a fortnight or so, when the cavity has contracted down to small dimensions, if a fistula exists it can then be slit up to the surface without damage to control, provided that the internal opening is not above the deep portion of the external sphincter, which should never be divided, at any rate in one stage.

Sometimes an ischio-rectal abscess makes its way behind the bowel to the opposite side. It is well to bear this in mind. Very occasionally an ischio-rectal abscess occurs as an extension of a pelvi-rectal abscess which has burrowed through the levator ani. If most of the skin forming the floor of the abscess has been cut away this complication can usually be established, if it exists. These operations should be performed under low spinal or general anaesthesia, preferably pentothal and gas-and-oxygen. A considerable number of the fistulae which find their way to St. Mark's Hospital show cicatricial evidence of a previous inadequate incision into the ischio-rectal fossa that is usually linear and too short. This method encourages the formation of a fistula and saves no time; rather the reverse. The excision must be T-shaped or, preferably, crucial, and all the loose overlapping edges of skin removed. If the abscess is acute and the temperature high, and especially if there is any suggestion of a gas infection, Carrel-Dakin treatment is essential, combined with anti-gas-gangrene serum. If the culture reveals streptococci sulphanilamide should be employed (with due precaution as to diet, etc.).

PELVI-RECTAL ABSCESS

Much depends on the origin of an abscess in this situation. With one finger in the rectum the location and extent can be gauged. A small incision is first made through the skin of the ischio-rectal fossa, and a director guided by the finger in the rectum is then passed upwards and thrust through the levator ani until pus is reached. A pair of forceps is then passed along the director and the track through the muscles stretched. Before the forceps is removed a drainage tube is passed up along the forceps and firmly attached to the skin. Before dealing with the abscess the interior of the bowel is carefully

examined for evidence of fistula. Subsequent treatment will depend on the origin of the abscess. Every effort should be made before and after to locate the source of infection. Great care is required not to shorten or remove the tube too quickly, and it may sometimes be wise to investigate the sinus with lipiodol and *x* rays if healing is delayed.

In the event, happily rare, of an acute pelvi-rectal abscess with gas infection prompt and somewhat drastic surgery is required to lay this freely open to the surface, and no consideration of sphincteric function should be allowed to hamper the surgeon in his effort to check an infection which may easily prove fatal.

TUBERCULOUS ABSCESS

Gabriel, at St. Mark's, shortly after the war examined seventy-five cases of fistulae histologically and by inoculation, and obtained positive results in twelve of them. In five consecutive years at St. Mark's 888 cases of fistula were operated on, and in 119 (13.4 per cent.) of these there was histological evidence of tuberculosis. A tuberculous abscess in a patient who is not the victim of active tubercle elsewhere responds well to surgical treatment, though progress is usually sluggish. If a tuberculous ischio-rectal abscess is met with in association with active pulmonary tuberculosis surgery should be limited to simple drainage, and radical measures avoided, at any rate in the first instance, until the patient's power of repair has been ascertained. A cure can only be expected if the constitutional measures adopted against the disease bear fruit.

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TUBERCULOSIS IN WALES

THE COMMITTEE'S REPORT

The report is published this week of the committee appointed in September, 1937, by Sir Kingsley Wood, when Minister of Health, in response to the request of the King Edward VII Welsh National Memorial Association for an inquiry to be held into the anti-tuberculosis service in Wales and Monmouthshire.[1] The committee consisted of Mr. Clement Davies, K.C., M.P., and Dr. F. J. H. Coutts, C.B., and its inquiry was held, in the main, in public. The report—a Blue-book of nearly 300 pages—gives a searching analysis of the whole situation, and is outspoken in criticism of the bad housing and bad hygienic conditions that are allowed to persist in many areas. The backward local authorities are unsparingly rebuked for their neglect.

The problem of tuberculosis is relatively more serious in Wales than in England, for the death rate has not declined so rapidly and exceeds that of England. The excessive mortality in Wales occurs among young adults aged 15–25 and in the age group 25–45. In contrast with England, the rates at 15–25 show little change since 1921, and the rate for females is distressingly high. For many years, however, the crude death rates from tuberculosis at all ages for seven of the Welsh counties have exceeded those for all the other counties in England and Wales. Certain areas, notably in Anglesey, Caernarvon, and Merioneth, are especially afflicted.

Racial Susceptibility not a Factor

Why Wales should lag behind in the diminution of tuberculosis mortality is carefully considered. The report states that, for practical purposes, racial susceptibility as a factor in causing high mortality may be ignored, and everything possible should be done to combat the fatalistic attitude which is still prevalent in Wales and is encouraged by over-emphasis on this point. Improvement of housing and sanitary conditions, and, above all, a stricter insistence on the segregation of the infective case, are more important for a population considered to be specially susceptible. Segregation in tuberculosis is one of the most powerful preventive measures against the spread of the disease.

The National Memorial Association

The Welsh National Memorial Association undertakes, on behalf of the county and county boroughs in Wales and Monmouthshire, their duties under the Public Health Act, 1936, for the treatment of tuberculosis. Preventive duties are, however, in the hands of the local authorities, and the committee is satisfied that this broad division of responsibilities should be maintained. The association, which under its president, Lord Davies, raised large sums of money for the provision and equipment of hospitals and dispensaries, now depends for its income on contributions from the rates. The governing body is largely composed of representatives nominated by the county or county boroughs, but the association retains its character as a voluntary organization, and it is the general desire that it should continue to do so. The committee was impressed with the general efficiency of the association's work, and could find no evidence that it was carried out on extravagant lines. It is satisfied that additional bed accommodation is necessary if tuberculosis is to be adequately dealt with.

The number of beds at present available to the association is below the usually accepted standard, and the home conditions in some parts of Wales render it imperatively necessary from the point of view of prophylaxis to segregate a larger proportion of patients. There is room for a new fully equipped hospital of 200–250 beds in the Swansea area, but if such a hospital is provided further consideration ought to be given to future use of the South Wales Sanatorium.

In dealing with the difficult problem of hospital provision the committee suggests that in the special circumstances of Wales, with a widely scattered population in some areas, small local institutions of a simpler type might be valuable adjuncts to the more fully equipped hospitals. These could very suitably be provided in conjunction with any general regional hospital scheme, and would be used for cases requiring observation or prolonged segregation. The future development of residential accommodation should be planned with these principles in mind. Grave consideration should be given before spending any large sums in improving or extending those institutions which were from the outset inconvenient and unsuitable.

The committee is satisfied that the research activities of the Memorial Association cannot be curtailed without serious loss to the efficiency of the organization, and recommends that the proposal for the provision of a new laboratory, in conjunction with the School of Medicine and the Cardiff Royal Infirmary, should be approved. It suggests that the proposal to establish a village settlement in Wales should be thoroughly explored.

Tuberculosis After-care

After-care work on an organized basis, to secure the social welfare of patients and their families, has made very little headway in Wales, though it has not been entirely neglected. In many of the rural areas little has been done beyond the relief of necessitous cases as ordinary members of the community. The committee does not recommend that the association should undertake after-care work, but it trusts that as a result of the inquiry local authorities will realize the importance of setting up effective care organizations invested with the widest possible powers and equipped with efficient personnel. The committee finds that the scheme of treatment drawn up on

[1] H.M. Stationery Office. (4s. 6d.)

national lines possesses very solid advantages. It enables a uniformly high standard of treatment to be maintained throughout the country, and research and investigation to be undertaken on a useful scale. It also offers a career in tuberculosis work to doctors interested in clinical medicine.

Importance of Preventive Work

There is, however, a tendency to forget that treatment is only one aspect of tuberculosis work, and that the main line of preventive effort is outside the sphere of tuberculosis officers. Unfortunately, over large areas in Wales preventive duties are neglected or carried out very imperfectly by local authorities, who do not appear fully to realize their responsibilities. The report stresses the importance of securing closer co-operation between tuberculosis officers and local authorities in the common fight against tuberculosis. Particularly, more strenuous efforts are required to secure the examination by the tuberculosis officers of all those, and especially young adults, who have been in contact with infective cases. If all young adult contacts of notified cases could be persuaded to attend for examination many cases could be caught at an early stage and many lives might be saved. Medical practitioners are urged to bear in mind the importance of making the utmost use of the service of sputum examinations for tubercle bacilli generally provided nowadays, free of cost to doctor and patient.

On the broader aspects of preventive work the committee feels that the importance of environment in relation to tuberculosis cannot be overstressed, and it has given much attention to such questions as housing and overcrowding, sanitary administration, and the conditions of schools. In many areas in Wales conditions were found which only too well explain why the disease has not decreased as rapidly as might have been hoped. The chapter headed "Standard of Services Provided" contains paragraphs of special interest and importance to the general practitioner.

Housing as a Factor

The report states that in the rural areas, villages, and small towns there are hundreds of houses which are unfit for habitation. Attention is specially drawn to the old-fashioned Celtic type of cottage still to be found in the more remote counties, in which families live under the most primitive and often overcrowded conditions. Many striking examples are given of unsatisfactory housing and sanitary conditions in rural areas. Notwithstanding the bad conditions the local authorities in many areas have in the past quite failed, as figures which are quoted show, to tackle their housing problems properly. There is evidence to suggest that even their slum clearance programmes may be by no means complete. While giving full weight to the special difficulties of rural areas, the committee is of opinion that most authorities in the rural counties have fallen far short of their obligations and have failed to carry out properly their housing duties.

With regard to the conditions in schools, the report says that, while heavy capital expenditure on school buildings is being incurred in Wales, there are schools still in use in which the conditions lower the vitality and lessen the resistance of the children to disease. Such schools should be closed and much more attention should be paid generally to the improvement of conditions in the schools, particularly in relation to such matters as heating and sanitary arrangements, and facilities for drying wet clothes. In rural areas there is a too ready acceptance by local education authorities and by parents of the unsatisfactory and often unhygienic standards of the past.

Nutrition and Faulty Diet

There is scope for much improvement in the provision of milk and meals in schools. Some local education authorities appear to be very inactive in providing milk either free or under the milk-in-schools scheme. Moreover, the authorities in Wales as a whole, with few exceptions, make little or no provision for midday meals. In the interests of the health and future well-being of the children there should be a high and uniform standard in these matters throughout Wales.

Generally, also, it is of immense importance to ensure that the nutrition of young children is really satisfactory, not only to promote their general health, but to increase their resistance to tuberculosis under the stresses of early adult life. The evidence submitted to the committee suggested that in Wales there have been great changes in food habits, especially in rural areas, which are not beneficial to the community. Formerly the average country labourer would have his home-cured ham and would provide from his kitchen garden adequate supplies of fresh vegetables for nourishing soups and stews. Milk and buttermilk were freely consumed. Now buttermilk is unobtainable and milk is expensive. The garden is neglected, and few housewives take the trouble to prepare the different varieties of soups and stews. Instead the staple diet is tea, bread-and-butter, sometimes with jam, supplemented by prepared foods but with practically no green vegetables. The impression left upon the committee was that there was a considerable amount of poor nutrition, more noticeably in some rural areas, but that poverty was by no means the chief factor in malnutrition. It finds that some local authorities in Wales have not been as active as others in seconding the efforts of the State to obtain clean milk free from the tubercle bacillus. It hopes that with the creation of a State Veterinary Service more vigorous steps will be taken to eliminate infected cattle.

Poverty of Many Local Areas

The committee concludes by saying that throughout its inquiry the members were conscious of a great disparity among local authorities in Wales in the standard of performance of public health services, in activity, and in realization of responsibility. It calls attention to the marked variation in population and resources, and particularly to the poverty of many local areas of administration. In one-half of the non-county boroughs, urban and rural districts, the yield of a penny rate is less than £100, and in many cases it is less than £30. In the opinion of the committee many of these authorities, owing to their small population and inadequate resources, are quite incapable of carrying out their public health duties properly. Most of the poverty and weakness in administration is to be found in these areas, and without the stimulus of outside influences there is little or no hope of advancement in vital matters affecting health. It is disappointing to find that so little effort has been made in Wales to secure the appointment of full-time medical officers of health and other officers.

BRITISH PSYCHO-ANALYTICAL SOCIETY

TWENTY-FIFTH ANNIVERSARY

The twenty-fifth anniversary of the foundation of the British Psycho-Analytical Society was celebrated by a dinner on March 8, when Dr. Ernest Jones, president, was in the chair. The following letter from Professor Freud, who was unable to be present, was read by the Secretary of the Society, Dr. Sylvia Payne:

"Dear Jones,—It is curious indeed how little we human beings guess about future developments. When, shortly before the war, you notified us of the foundation of a Psycho-Analytical Society in London, I could not foresee that I would come to live so near to you and to the Society. Nor could I have imagined the possibility that in spite of my nearness I would not be able to take part in the celebration of the Society's twenty-fifth anniversary. But, impotent against fate, we have to accept whatever is imposed on us. So I can do no more than send hearty congratulations and sincere wishes for success from my remoteness. In consequence of recent events London has become the centre and stronghold of our

psycho-analytical movement. I trust the obligations derived from this situation will be met by all of you in the most splendid manner."

In proposing the toast "The Society and its President," Lord De La Warr, President of the Board of Education, said that most people found it difficult to face one psycho-analyst, and it was therefore with some trepidation that he faced ninety. During the last few years everybody had acquired the jargon of psycho-analysis without knowing very much about it. There had been much ill-informed, superficial criticism—and also support—that was based on an equally unsubstantial foundation. Like all pioneer work, psycho-analysis had suffered a great deal of misunderstanding, but, led by their president, the psycho-analysts had quietly pursued their task, had produced their journal, and had at their clinic treated many hundreds of poor patients. To a considerable extent they were indebted to their president that Professor Freud had done this country the honour of choosing it for his own. The thought and philosophy of the world, he continued, could never be the same after Freud's work on the subconscious mind, and this had, he believed, played an increasingly important part in ideas that were current in the contemporary world. After paying a graceful tribute to Dr. Ernest Jones, Lord De La Warr said that they were celebrating a young, growing, and intensely alive science.

The proposal was seconded by Dr. Raymond de Saussure, who said it was with great pleasure that he had the honour to convey to the meeting messages of congratulation from France. Dr. Jones had presided over the destinies of the British Psycho-Analytical Society with competence and authority, and had, during his time, published many articles of great merit. After referring by name to various distinguished workers in the field of psychology, Dr. de Saussure said he felt convinced that this country would gain great benefit from its reception of psycho-analytical colleagues from Vienna. Mr. Ernst Kris, who also supported the proposal, greeted Dr. Jones as the founder and president of the British Psycho-Analytical Society and also as one of the founders of the International Psycho-Analytical Association. He was, he continued, one of the first English psychologists to recognize the importance of Freud's work, and was one of the pioneers of psycho-analysis in the English-speaking world. All the psycho-analysts who had recently been dispersed from Germany and Vienna and Central Europe had found jobs in various parts of the world, and for this they were deeply indebted to Dr. Jones.

In reply Dr. Jones said that when he founded the British Psycho-Analytical Society he certainly could not have foreseen that twenty-five years later Professor Freud and his daughter would be members of it. He paid a tribute to Sir Samuel Hoare for all that he had done in enabling Professor Freud and some of his co-workers to come to this country, and charged Miss Freud to convey to her father their respect and good wishes. Dr. Jones surveyed briefly some of the events in the history of the Society, and went on to defend the policy of admitting lay analysts, although he agreed that a medical training was preferable. The pioneer work that had been done by some lay analysts was, he felt, a sufficient justification for this policy. He referred briefly to the "storm of opprobrium" against psycho-analysis on the part of the medical profession in the early days. He had adopted then, and had used his influence to persuade other people to adopt, a policy of avoiding controversy and propaganda on behalf of psycho-analysis, so as not to waste emotion and effort that would be better expended on productive work. Dr. Jones also referred to the establishment of the London Clinic of Psycho-Analysis, which was the gift of Dr. Pryns Hopkins, and which he regarded as the most important psycho-analytical teaching centre in the world.

The health of "The Guests" was proposed by Dr. Edward Glover and responded to by Dr. Walter Elliot, the Minister of Health.

ANTI-GAS HELMETS FOR INFANTS

A demonstration of the gas mask which has been designed by the Air Raid Precautions Department for children under 2 years of age was given recently at Holborn Town Hall. An official from the Experimental Station at Porton described the research which has taken place, extending now over three years, in the endeavour to discover a suitable protection for babies in arms. The low respiratory strength of the young child makes the ordinary respirator impracticable at present, though it is hoped to introduce modifications which may get over the difficulty.

The helmet device consists of a hood of gas-proof khaki fabric, padded on the under-side and provided with a large window of cellulose acetate. Air is supplied by means of a rubber bellows operated by the mother's right hand as she holds the child. The air passes through a container which removes all poison gas, and enters by an orifice so shaped

[Photopress

as to sweep all vitiated air out of the hood, at the same time preventing any direct draught on the child's head. The fabric closes round the waist by means of a draw tape so that the arms and shoulders are contained, but enough room is left for the child to get its hands to its mouth, a concession to infantile habit which has been found necessary. The helmet is supported in a light metal frame, consisting of a head-piece and a tail-piece, the latter turned up at the end to form a seat, which prevents the occupant from slipping out of the hood, while a strap makes for double security.

The device is large enough to take children up to 4 or 5 years of age, but for children over 2 there are respirators available, similar in design to those issued for adults, subject to certain modifications. It was stated at the demonstration that if by chance the pumping action was stopped the child would be quite safe for several minutes in such a contrivance and would suffer no discomfort, nor would there be any admission of gas. The experiments at Porton have taken place in a gas chamber, with the mothers themselves wearing respirators and holding the children in helmets, and it has been established that the infant is safe in an atmosphere poisoned by all known gases used in war. The protection afforded is said to be equal to that of the service respirator.

The helmets will be a free issue but will remain the property of the Government. As there is nothing in them

to deteriorate they can be stored indefinitely. The weight of the contrivance is 6 lb., but, of course, this is not supported by the child, who rests in it as in a cradle. It cannot be said that at the demonstration the infants, who were a few weeks old, co-operated. The sound of their continuous crying penetrated the helmets in which they were encased, but it was pointed out that this was not necessarily a disadvantage, as it proved that at all events the child was still able to breathe. Possibly in happier circumstances than in a gathering of journalists the children may prove more amenable, and it was stated that they had been known to go to sleep in the helmet. Apparently the feeding of the child in the helmet is impracticable.

AUXILIARY MEDICAL SERVICES

A NATIONAL REGISTER

The *National Register of Medical Auxiliary Services* (second edition) is now ready and can be obtained free by medical practitioners on application to the Registrar, Board of Registration of Medical Auxiliaries, British Medical Association House (North Wing), Tavistock Square, London, W.C.1.

The *Register* is an authoritative list of names, addresses, and qualifications of persons engaged in work ancillary to the medical profession. The names are arranged according to counties with alphabetical lists, and those whose names are on the roll have signed an undertaking that they will not undertake medical auxiliary work except under the direction and control of a medical practitioner. The primary purposes of the *Register* are:

(*a*) To afford a mutually beneficial means of maintaining contact between registered medical practitioners and duly qualified medical auxiliaries.

(*b*) To encourage the employment of duly qualified assistants and to prevent the exploitation by untrained persons of medical auxiliary work.

(*c*) To provide information concerning qualified medical auxiliaries not only for the use of the medical profession but also of institutions, spas, town and county councils, and other official bodies for general reference.

Hospitals, clinics, and local health authorities will be well advised to take this *Register* as their guide when making appointments, and no medical practitioner who has occasion to engage the services of medical auxiliaries should be without a copy.

The Board of Registration of Medical Auxiliaries, under whose direction the *Register* is published, was formed in 1936, and the following bodies govern its policy: The British Medical Association, the Society of Apothecaries of London, the Chartered Society of Massage and Medical Gymnastics, the Society of Radiographers, and the Association of Dispensing Opticians. More than 7,250 names appear in the *Register*, and in order to ensure the widest possible circulation it is also printed in geographical county group sections. This form of publication should find favour with members of the medical profession, as it presents, in a handy form, a register of masseurs and masseuses, radiographers, biophysical assistants, and dispensing opticians in a particular area whose services the medical profession can with confidence rely upon to carry out the various forms of auxiliary medical treatment for which they have been properly trained and qualified.

A new method for the determination of comparative toxicity of organic arsenical preparations by Dr. S. N. Sanyal (*Calcutta Medical Journal*, January, 1939) describes the measurement of the electrical conductivity of solutions of organic arsenics. The author concludes that the conductivity is roughly proportional to the toxicity.

Reports of Societies

ANTRAL INFECTION OF DENTAL ORIGIN

The Sections of Laryngology and Odontology of the Royal Society of Medicine combined for a discussion on March 3 on antral infections of dental origin, Mr. C. A. SCOTT RIDOUT presiding.

Mr. A. T. PITTS said that direct infection of the antrum from teeth was relatively uncommon. Abscesses and cysts of the maxilla might erode the bony floor, but rarely invaded the antral cavity. The commonest cause of infection of the antrum through the teeth was by the accident of a root entering the antrum or the latter being opened during extractions. In operating on cysts the integrity of the antrum should be preserved at all costs. Curetting a cyst cavity or removing the lining in the region of the antrum should be avoided. If a cyst had obviously involved the antrum, then treatment should be a combined matter for the dentist and rhinologist. If an antrum was opened in the course of extraction dental treatment should be expectant and limited to a suture. A tooth or root which was pushed into the antrum might sometimes be removable by suction. A tentative effort to remove by enlarging the opening might be justifiable, but if it failed further treatment was best deferred until the co-operation of the rhinologist was obtained. He was opposed to opening the antrum through the socket of a tooth and putting in a vulcanite plate with a plug. Operations on the antrum were essentially a part of rhinology, and not of dentistry. The treatment of the antrum by drainage was not in the dental surgeon's province.

Oral and Nasal Surgery: The Dividing Line

Mr. E. A. HARDY said that in a case of acute antral infection the oral surgeon should open and drain the tooth and send the case to the rhinologist for intranasal lavage before the offending tooth was extracted. He agreed with Mr. Pitts that the antrum, being one of the accessory sinuses, belonged entirely to the province of the nose and throat surgeon. The only neutral territory as between the oral and nasal surgeons was the bone between the antrum and the teeth. Allowing for the wide variations of the antral floor, this ground was nevertheless very thin, and sometimes there was encroachment by one of these types of surgeon upon the other's territory. In these days of enlightenment the wise oral surgeon only did it by accident, and the wise nasal surgeon had abandoned the old operation of Cowper, who advocated drainage through a tooth socket, the operation which Vorhees called the worst in surgery. Mr. Hardy commented also on the wide variation in the statistics of clinics in the percentage of cases which were due to oral infection. The proportion varied from 8 to 50 per cent.

Uncertain Factors in Pathology

Mr. A. J. WRIGHT said that while much attention had been paid to nasal infections of the antrum, the common dental infection had been relatively neglected. One uncertain factor in the pathology was the degree to which in some cases one might be dealing with a combined dental and nasal infection. He believed that not infrequently a chronic alveolar infection associated with the teeth might exist for many years, and with the onset of an acute nasal infection the whole thing would flare up, giving rise to a mixed dental and nasal infection. Another uncertain factor in the pathology was the frequency with which an infection of the maxillary antrum of dental origin might extend upwards to the ethmoidal and frontal sinuses. The cases which caused most difficulty in diagnosis were those in which the possibility of an antral

infection never occurred to the observer or indeed to the patient. As to treatment, prevention was usually possible, but cure was frequently difficult and sometimes impossible. In the great majority of chronic cases the disease had existed in the teeth or alveolus for a long period before the infection spread to the antral cavity. While they were being slowly taught to be more conservative in their outlook on the nasal sinuses, most of them were trying to convert their dental colleagues into being more radical so far as the teeth were concerned. In designing operative measures for the treatment of antral suppuration, he would suggest that if the antrum were opened through the canine fossa the incision should be made low down on the alveolus, particular attention being paid to the alveolar sulcus.

Effect of Tooth Extraction

Mr. E. D. D. DAVIS said that the opening of the antrum by extraction of teeth was a common occurrence, and looking at the floor of the antrum one saw how easy this was. There were very few dental surgeons of experience who had not opened an antrum at some time or other. The patient should be told beforehand that it was quite easy to open the antrum, and that this was one of the risks of extraction of a wisdom or upper molar. With regard to the pushing of a root into the antrum, this usually resulted from fracture of the apex of the root; the dental surgeon was naturally anxious to get at the apex, and so his forceps either went into the antrum beside the root or he pushed the root into the antrum. It was first necessary to make sure that the root was in the antrum. If the piece was in the alveolus it would be vertical, if in the antrum it would be more or less horizontal and at a higher level. Mr. Davis was against enlarging the opening of the alveolus because of the fistula that might result, and in a number of these cases he had had to open the antrum from the canine fossa and take out the root. He had not yet made up his mind whether that should be done at once as an emergency operation or whether after some delay. There was great oedema of the mucous membrane of the antrum shortly after the tooth had been driven into it, and it was better if possible to open the antrum a little later, after the oedema had disappeared. The operation in an antral infection of dental origin was much more successful than in one of nasal origin. In his experience antral operations in dental disease did extremely well. He had found that the cases in which the antral suppuration was of dental origin accounted for 20 per cent., the rest being of nasal origin, but his experience was weighted on the dental side, because he received cases from the Royal Dental Hospital.

Professor H. H. STONES said that dental surgeons saw very few cases of infection of the antrum which were certainly of dental origin. He thought he had seen three or four from an acute apical condition, but none from chronic infection. A few years ago he carried out some experiments on the alveolar bone in pyorrhoea and found that the bone immediately under the alveolar crest was only infected in 15 per cent. of cases. He would therefore think that the possibility of the infection of the antrum in the chronic dental infections was remote. Experienced bacteriologists said that a pulpless tooth was always infected, irrespective of the radiological findings. On the other hand, it was known that around that little area of rarefaction there was an intense round-celled infiltration, and one rather wondered to what extent this acted as a barrier.

Mr. W. A. MILL was interested to hear the opinion that dead teeth were always infected whatever the *x*-ray appearances might be. He had had a number of cases *x*-rayed in which he had strongly suspected that the teeth were the cause; the *x* rays suggested an absence of infection, but the symptoms, such as pain in the ear and in the face, nevertheless persisted.

CONGENITAL MEGACOLON

At a joint meeting of the Liverpool Medical Institution and the Manchester Medical Society, held at Liverpool on March 2, with the president of the Liverpool Medical Institution, Dr. WILLIAM JOHNSON, in the chair, Mr. H. T. SIMMONS (Manchester) read a paper on congenital megacolon and its treatment.

Mr. Simmons said that until recent years the treatment of congenital megacolon was very unsatisfactory. Since Parry's original description in 1825 we had amassed a great deal of literature and established a number of facts, but lack of knowledge of the actual cause of the disease was still the main difficulty in treatment. The condition was a congenital high-grade dilatation of the colon with thickening of the coats, especially the muscular layer. Although there was retention of large quantities of faecal matter, there was no obstruction to the lumen of the bowel and no evidence of the formation of any sphincter. The pelvic colon was the main site of the disease in some 70 per cent. of cases. Microscopical examination showed hypertrophy and chronic inflammation, and although Cameron stated that Auerbach's plexus was degenerated, this had been denied by many subsequent observers. The theories advanced to explain congenital megacolon fell into three groups: developmental, mechanical, and neurogenic, of which the last was the most probable.

Until recently the operation of Telford and Stopford had been the best method of treatment. Out of nine cases so treated over two years ago in Professor Telford's clinic, six were in excellent condition, two were greatly improved, and one was a failure. In the last twelve months four cases had been treated by a high spinal anaesthetic only. Stabins, Morton, and Merle Scott reported that some of their cases had been improved in this way. These four cases gave an excellent response, equal in every way to that previously obtained by sympathectomy. This appeared to be strong evidence in favour of congenital megacolon being a true achalasia, and if the improvement was maintained this procedure was a distinct step forward in treatment, since sympathectomy in these young children was a major operation. It was dangerous to express any opinion or draw any conclusions from interference with the sympathetic nervous system until at least two years after the operation, so that no conclusion as to the permanent benefit of treatment by spinal anaesthesia could as yet be drawn. However, it was recommended that a high spinal anaesthetic be used in the treatment of congenital megacolon before considering sympathectomy, because the effect of the spinal anaesthesia might render the operation unnecessary.

General Discussion

In the discussion which followed, Mr. J. B. OLDHAM said that he had treated seven cases of Hirschsprung's disease by lumbar sympathectomy, and two of these cases had been operated on over ten years ago. He was interested in Mr. Simmons's experience with the effect of spinal anaesthesia, but feared that this form of therapy would not be universally successful. Mr. Oldham showed radiographs taken in 1926 after the administration of a barium enema in such a case, and before and after spinal anaesthesia. The radiographs seemed conclusive proof that the anaesthesia was high enough to block all the sympathetic fibres to the colon, yet this patient showed no improvement and a sympathectomy had to be done in 1928. Mr. Oldham admitted the merits of Professor Telford's operation, but thought that it would be very easy to miss one or two fine nerves, which would be sufficient to spoil the operation. He considered that the transperitoneal approach, even in bilateral cases, was unjustified, and he advocated an extraperitoneal approach through a muscle-splitting incision. He had found no objection to a complete removal of the lumbar ganglionated cord, and indeed his patients had all expressed appreciation of the

resulting vasodilatation. He mentioned that there appeared to be a definite familial tendency in the disease.

Mr. M. J. BENNETT-JONES asked what drug was used in the production of the high spinal anaesthesia which produced amazingly permanent results. He wondered whether spinocain, which contained a small quantity of alcohol, was used, because intrathecal injection of absolute alcohol had now proved to be very valuable in the relief of inoperable pain in the lower limbs and abdomen. In Mr. Simmons's subsequent reply it was stated that decicain was used.

At the same meeting Dr. R. ELLIS (Manchester) read a short paper dealing with the post-mortem findings in fifty cases of cardiovascular disease.

Following the annual general meeting of the Society of Public Analysts and Other Analytical Chemists on March 3, a lecture was delivered by Sir HENRY DALE, M.D., F.R.S., on "Biological Standardization." The lecturer outlined the history of the establishment of standards for the biological assay of preparations of physiologically active products such as antitoxins, hormones, vitamins, etc. Attempts to set up units in terms of physiological effects under particular experimental conditions ("rat units," "mouse units," etc.) had led to wide discrepancies and great confusion, owing largely to the difficulty of reproducing the conditions under which the proposed units were first determined. Following the pioneer work of Paul Ehrlich, the systematic establishment of international "units of activity," based on stable standard preparations of the active substances, was begun under the auspices of the Health Organization of the League of Nations in 1921, and a number of these standards had been prepared at the State Serum Institute, Copenhagen. Standards for a still larger number of products had more recently been prepared in this country at the National Institute for Medical Research, Hampstead. Sir Henry Dale gave a general account of these developments and some particulars of the standard preparations now available. The lecture will be published in full in the *Analyst*.

At a meeting of the Manchester and District Medico-Legal Society held on February 24, with the president, His Honour Judge LEIGH, in the chair, Dr. ARNOLD RENSHAW read a paper entitled "The Pathologist's Assistance in the Investigation of Murder," illustrated with lantern slides. After general discussion, in which medical and legal members took part, the president concluded by emphasizing that the duty of counsel in murder trials, as well as in all actions, even when prosecuting, was not to attempt to secure conviction of the accused but to present to the jury the full facts of the case by examination, re-examination, or cross-examination of the witnesses. He recalled how in one case it might have been thought that counsel for the prosecution was defending the accused man. The result of the trial was that the prisoner was set at liberty at the conclusion of the assizes.

Our report of Professor Grey Turner's third and concluding Lettsomian Lecture on the surgery of the gall-bladder and common bile duct will appear next week.

Queen Mary paid a visit to the National Institute of Industrial Psychology on March 8, and spent over an hour in acquainting herself with details of the Institute's vocational guidance work and with its procedure in advising employers in the use of psychological methods in selecting and training workers. Her Majesty watched with great interest a boy undergoing a test of mechanical ability so that information on his suitability for a career in engineering work could be estimated. A series of tests designed to select new workers for various branches of the textile industry was demonstrated; also a short film for use in the training of foremen and supervisors to realize the importance of apparently minor details in reducing the mental and physical effort required to carry out a task.

Local News

ENGLAND AND WALES

L.C.C. Mental Health Services

The annual report for 1937 of the mental health services of the London County Council, which has recently been published, reveals an increase in the amount of accommodation for mental cases and also in the number of cases which have required treatment. The cases of mental disorder receiving institutional treatment represented 6.67 per 1,000 of the population of the County of London, and 3,264 acres of land are devoted at present to the estates of the Council's institutions. The need for accommodation for persons who are mentally disordered is approximately in the proportion of three for male patients to four for females; this estimate represents the average for several years. There were more patients in the age group 45 to 54 than in any other group, and of these patients more were single than married. Prolonged mental stress was deemed to be the principal cause of mental breakdown in 501 of the 3,487 admitted directly during 1937. Syphilis was not prominent as a direct or indirect cause. Nearly 66 per cent. of the direct admissions during 1937 came in their first attacks. More than one-third of the direct admissions were housewives, retired persons, scholars, or students, while about one-sixth came from the staffs of institutions such as hotels and clubs. In addition to their medical and nursing treatment various forms of mental and physical recreation are provided, both outdoor and indoor, and instruction is given in physical training; there is also a good list of entertainments which have been found to have a curative effect in some types of cases. Summer holidays at the seaside are also made available for a number of selected working patients who have no friends in a position to render them this benefit, or to take them on daily or week-end leave. In one hospital an experiment is being made which seems to have considerable possibilities. A few suitable voluntary patients, after recovery, are given special training at educational institutions. Trades are chosen for which the patients appear to have aptitude, and it is hoped that they may thus be helped to resume ultimately an independent life with less risk of another mental breakdown. During 1937 at the Maudsley Hospital, where only voluntary patients are treated, there was an increase of 226 over the numbers for the former year. A further 1,648 persons were treated as out-patients at psychiatric clinics established in connexion with the Maudsley Hospital at three of the County's general hospitals north of the Thames. The total number of living mental defectives known to the Council on December 31, 1937, was 17,918, of whom 11,429 were under active care—a ratio of 4.38 per 1,000 of the population of the County of London. Of the mental defectives who were under statutory provision in their own homes, and were in employment, a larger number were engaged in factory work than in any other occupation. This sixth volume of the annual report of the mental health services of the London County Council may be obtained for 1s. (1s. 2d. post free) either directly or through any bookseller from P. S. King and Son Ltd., 14, Great Smith Street, London, S.W.1.

Medical Society of London

The annual dinner of the Medical Society of London was held on March 9, with the president, Dr. C. E. Lakin, in the chair. After the loyal toasts had been honoured the health of the Society was proposed by Dr. Walter Elliot, Minister of Health, who, as befitted a Scotsman, began his speech by quoting the well-known remark of Dr. Johnson's about the road that leads from Scotland to London. A Scotsman, he continued, always felt the more

honoured when he was welcomed into the professional groups of the capital, as these groups and societies expressed better than anything else the spirit of the profession. What characterized the London Society was the urbanity of it, a certain degree of dignity, and the feeling that you were here part of a capital city. Dr. Elliot quoted one more saying of Dr. Johnson's—that he who is tired of London is tired of life. Dr. Lettsom, he felt sure, would have found himself quite at home in the atmosphere of the Society to-day. There was, he said, a feeling of life, of vigour, of close touch with reality, that was characteristic of the medical profession, to which they of the Ministry of Health were increasingly indebted. He himself had recently had to ask the profession to turn its thoughts from peace to war, and he realized that the difficulties of mental adjustment required on the part of the public and of the medical profession were enormous—so much so that he had thought it impossible to achieve what they wanted to achieve within the time. But he had been wrong. In response Dr. Lakin, after thanking Dr. Elliot for what he had said about their Society, referred to an interesting incident in connexion with the cholera epidemic of 1842–3. The celebrated pump in Broad Street, Soho, was well known for the excellence of its water, and some of the old Broad Street residents who had removed to Hampstead still got their water from this pump. They were the only people in Hampstead who caught cholera. It had been said, continued Dr. Lakin, that a medical education fitted a man for any kind of pursuit, and as evidence of this he had been informed that Mr. Claridge, the founder of the hotel in which they were dining, was once a medical student of St. George's. Referring to the current controversy about State medicine and private practice and the slogans that had been hurled about by both sides, Dr. Lakin said that the wise man was he who went between the proverbs and pursued the middle course. With the exception of a students' society at Guy's, the Medical Society of London, he went on, was the oldest medical society in that city. Lettsom, who had founded the Society when he was only 29 years old, came from no great school or university, but was apprenticed to a Yorkshireman who was a good classical scholar. The health of "The Guests" was proposed in a witty and charming speech by Mr. A. Simpson-Smith, and responded to by Professor W. Fletcher Shaw, President of the Royal College of Obstetricians and Gynaecologists.

SCOTLAND

Milk for Mothers and Children

A circular issued by the Department of Health for Scotland to local authorities in the area of the Scottish Milk Marketing Board outlines a scheme to provide milk at a reduced price to expectant and nursing mothers and to children under school age. The new scheme provides that all expectant and nursing mothers and children under school age in families having a certain limit of income shall receive one pint of milk daily at a cost of 2d. a pint instead of the usual price of 3d. or 3½d. In certain cases also the milk may be supplied free of charge. The scheme has been prepared by the Scottish Milk Marketing Board and approved by the Secretary of State for Scotland, and the cost is to be borne partly by the Milk Marketing Board and partly by the Exchequer. Milk in excess of the quantity stated above, which is recommended on medical grounds, may also be supplied.

Glasgow Royal Mental Hospital

At the annual meeting on February 28 of the Glasgow Royal Mental Hospital Dr. Angus MacNiven, physician-superintendent of the institution, said that the importance of investigating and treating the behaviour and delinquencies of children was brought home by the fact that 27,126 of the persons convicted of offences in Glasgow during 1936 were under 17 years of age. The older methods of retributive punishment were becoming discredited, and methods aimed at reforming the delinquents were being increasingly adopted. He believed that the desire to replace purely punitive methods by attempts to reform and rehabilitate the criminal was worthy of every encouragement, particularly at the present time when the world seemed to be dominated by destructive forces. Sir Hector Hetherington, Principal of Glasgow University, who occupied the chair, suggested that the whole problem of mental health should be tackled on a wide basis through the co-operation of universities, medical schools, and general and special hospitals which were interested in the study of disease. The statistics for the year showed that there were 556 patients resident in the Glasgow Royal Mental Hospital at the beginning of the year and 555 at the close. The average number resident had been 565 and the total 772.

Presentation to Edinburgh Doctor

Dr. John Cumming, F.R.C.S.Ed., F.R.C.P.Ed., who has retired after forty-six years of practice in Edinburgh, was the recipient recently of a presentation from a large number of his former patients. Professor James Mackinnon, who made the presentation, said that Dr. Cumming's thoughtful and kindly qualities had made him more than a medical adviser; he had been a friend to each one of his patients. In his reply Dr. Cumming said that it was a great wrench to give up the work he loved so well and so long, but he had been forced by considerations of health to take this step.

IRELAND

Postgraduate Courses in Dublin

An interesting scheme likely to attract those desirous of taking out "refresher courses" in clinical surgery and medicine is under consideration by the Standing Committee of the Dublin Clinical Hospitals. The plan suggested is as follows. The course, which is to be devoted wholly to clinical work in the wards and out-patient departments, will be held from June 19 to 30, inclusive. Each of the ten clinical teaching hospitals will be "At Home" to postgraduate visitors on one day in each week. The hospital day will be divided into two sessions—morning and afternoon—with an interval during which lunch will be provided for visitors by the Medical Board of the hospital. In the main, it is the intention that the morning sessions will be devoted to surgery (wards and operations) and the afternoons to demonstrations in clinical medicine. Detailed plans, showing the scope of the work in detail to be presented by each hospital staff, will be published later. The fees for the course will be £3 3s. for two weeks' attendance, or £2 2s. for either single week. Applications for attendance tickets may be made either to Mr. William Doolin, President R.C.S.I., or to Professor T. T. O'Farrell, F.R.C.S., at St. Vincent's Hospital, Stephen's Green, Dublin.

Medical Research Council of Ireland

The Medical Research Council of Ireland has made the following awards:—Dr. T. E. T. Bradshaw: Training grant for one year's training in methods of research on hormones. Professor T. W. T. Dillon: Grant-in-aid for one year to enable him to employ a trained technical assistant in connexion with his research work on an experimental study of the kidney threshold, in the Department of Materia Medica and Therapeutics, University College, Dublin. Professor J. F. Donegan: Grant-in-aid

for one year to enable him to carry out an investigation on the effect of potassium deficiency on the relaxation phase of the heart, in the Department of Physiology, University College, Galway. Dr. Patrick FitzGerald: Grant-in-aid for one year for laboratory expenses in connexion with his training under Professor J. M. Beattie, Royal College of Surgeons of England. Professor Hans Sachs: Whole-time grant for one year to carry out serological research in the Department of Bacteriology, Trinity College, Dublin. The following renewals have been sanctioned: Dr. J. C. Flood's part-time research grant for six months from March 1, 1939; Dr. R. A. Q. O'Meara's whole-time research grant for twelve months from April 1, 1939; and Dr. J. C. Shee's whole-time research grant for six months from March 23, 1939.

Correspondence

Treatment of Lobar Pneumonia

SIR,—It is only natural that experienced practitioners will desire to report examples of spectacular recoveries from lobar pneumonia treated by some special method—for example, the administration of M & B 693. And it is only natural that, whilst their experience or intuition has persuaded them that credit should be attributed to the treatment, they are too cautious to forget that the *vis medicatrix naturae* may after all have been responsible.

One may be entitled to doubt if it is possible ever to be sure of the unquestionable influence of any treatment in a self-limited disease like lobar pneumonia. A few weeks ago I was asked to see a man of 65 apparently moribund in the third day of his illness, both lungs solid and, in addition, auricular fibrillation. The prognosis seemed hopeless. It was represented to me that my co-operation was a mere formality and that no treatment could be of benefit, two sentiments with which I was in complete accord. At my next visit I was agreeably surprised to see our patient sitting up and reading his newspaper. The greatest sceptic would have been induced to credit such unexpected recovery to any special therapy, no matter what, had any been employed.

During the war I had exceptional opportunity to observe lobar pneumonia on a large scale. In two and a half years I saw 558 cases from the onset of illness throughout to termination. The mortality rate of the series was 10.9 per cent. At one time the series included fifty-three consecutive patients who recovered, and were succeeded after one death by another forty consecutive recoveries—that is, ninety-four with one fatal result. I think it would have been not merely reasonable, it would have been irresistible, had any special or peculiar measure been adopted at this stage in this series, to have allocated to it the credit of so exceptionally high a recovery rate. Yet on not one occasion was any but symptomatic treatment employed.

Universal satisfaction will be expressed when anything can be proved to be a specific, or at least a valuable adjuvant, in the treatment of lobar pneumonia, and considering the present widespread application of M & B 693 accurate deductions must in due course be beyond doubt. We must also learn what, apart from the special dangers which have from time to time been indicated, are its disadvantages. A powerful remedy cannot be foolproof or provided with intrinsic intelligence.—I am, etc.,

London, W.1, March 11. ADOLPHE ABRAHAMS.

Risks of New Drugs

SIR,—Now that we have been given some new drugs which destroy certain specific and deadly germs it seems tragic that the usefulness of the drugs should be abused by prescribing them in season and out of season. I am alluding principally to M & B 693, which acts so dramatically in certain types of pneumonia.

Even so, we must use a toxic, and in some cases a dangerous, drug with great respect. Surely the delicate membranes of the stomach in young children must not be tried too highly by a drug which is powerful enough to destroy the envelope of the pneumococcus unless the indications for its use are definite. Again, the idiosyncrasies of the individual must be studied. Also, some seem to forget that because M & B 693 has been proved to be wonderfully potent in destroying the pneumococcus it is not even useful in cases of uncomplicated influenza.—I am, etc.,

London, W.1, March 13. HERBERT P.-S. DEVITT.

Nomenclature of Endocrine Preparations

SIR,—Endocrine therapy is difficult by reason of our comparative lack of knowledge of endocrine physiology and the uncertain results of the application of the findings of animal experiments to clinical medicine. But these difficulties are increased by the multiplicity of names that are given to identical glandular products by the various drug manufacturers. Some of these substances have a definite chemical structure, and therefore should be known by a single name—as, for example, sodium chloride, which denotes NaCl. At the moment I can recall six different names under which the oestrogenic compound is sold, and there may be many more.

It would simplify therapy if the manufacturers would get together and standardize the names which are applied to identical products, and it is difficult to see how they would lose in relation to each other if this arrangement could be made.—I am, etc.,

London, W.1, March 13. ALECK BOURNE.

Prague Sera Reactions for Cancer

SIR,—In an annotation under this heading, in the *Journal* of October 1, 1938 (p. 712), the Prague reaction, developed by Professor Heyrovsky and Dr. Brdicka, is briefly described, with comment more favourable than is usually accorded to tests for cancer.

Like many others, no doubt, I was interested by reading this annotation, and made inquiries regarding the polarograph necessary for the demonstration of the test. Although in a footnote to a paper by Professor Heyrovsky ("Researches with the Dropping Mercury Cathode: Part II, The Polarograph," by J. Heyrovsky and M. Shikata, *Recueil des Travaux Chimiques des Pays-Bas*, tome xliv) it is stated that the apparatus can be made for the cost of about £10, I found on inquiry that the only authorized makers of this apparatus were in Czecho-Slovakia or in America, and the prices quoted were 660 and 440 dollars respectively. In view of past experience with alleged diagnostic tests for cancer, one would hesitate to spend such a large sum on an apparatus which might prove to be of little practical value for cancer diagnosis. At the same time, claims to diagnose early cancer cannot be rejected out of hand on the ground of the expense of the apparatus any more than they can because the underlying theories on which they are based may seem improbable.

It is obvious that before any tests for cancer can lead to practical results they must give a very high proportion of clear positive results in very early cases of cancer. Results based on comparison between advanced cases of cancer, with inevitable complications, and non-malignant pathological states or with presumably normal controls, are never likely to be of practical value.

I should be glad to get into touch with anyone in this country who may be investigating this reaction or who may have the apparatus necessary for such an investigation, and who would be willing to collaborate by analysing sera from early confirmed cancer cases.—I am, etc.,

P. R. PEACOCK,
Director, Research Department, Glasgow Royal Cancer Hospital.

Glasgow, March 9.

The Nature of Growing Pains

SIR,—To one who has long been hoping for support for the view that children who complain of fleeting limb pains need not and should not be regarded as suffering from "subacute" or even from "pre-" rheumatism, and are not especially marked out for carditis, Dr. J. C. Hawksley's recent article on growing pains (*Journal*, January 28, p. 155) was very refreshing to read, and Dr. J. F. Warin's reply (March 4, p. 475) correspondingly disappointing. The disappointment is not with Dr. Warin's figures. His total numbers are small compared with Dr. Hawksley's. Any investigation of a subjective symptom unaccompanied by physical signs has obvious difficulties, and it may be cheerfully conceded that more research is needed before the relation or non-relation of limb pains to rheumatic fever can be settled for good. A general agreement that growing pains can exist in their own right would be, from my point of view, a step forward. The disappointment arises from the quiet phrase, "providing that games and physical exercises are suitably restricted." For here, apart from the academic interest of a problem in symptomatology, is the crux of the whole matter.

If a child complains of limb pains is it either necessary or right to separate him from the company of the healthy, to deprive him of his freedom to play and of his physical education, and to cast aspersions on the integrity of his heart (aspersions obvious to his parents if not to him) until after an indefinite period of "constant medical supervision" we at last make up our minds that he is or is not going to have rheumatic fever? The seriousness of treating a child in this way can surely need no emphasis. We can never give him back the play hours he loses, and we must all have seen patients whose ineradicable cardiac neurosis dates back to precisely such restrictions. If we are to do such a thing we must have very good reasons. But have we? Presumably we are sure that the child has no active carditis, for if he has he ought to be in bed. But if he has not, what is the restriction for? Is there any evidence that restriction of exercise will prevent an attack of rheumatic fever or carditis, or even that the most strenuous exercise will bring one on? Of course, rest in bed is good for carditis, although we know well that even rest in bed will not on occasion prevent an attack of acute rheumatism, but is it at all likely that this half-rest (which in any case commonly ceases the moment the child leaves the school gates) achieves anything whatever?

Is not our one duty to make a diagnosis of carditis or no carditis in the shortest possible time? For the purpose we have clinical examination, *x* rays, cardiogram, and, if necessary, observation for, say, a fortnight in a ward. Surely these things will give us an answer on which we can rely as certainly as on anything in clinical medicine, and if so may we not act as if we believed in our art and give the child at least his freedom to play if his heart is intact? Presumably the whole elaborate net is meant to catch that rare child who contrives to develop mitral stenosis but denies ever having had a day's illness in his life. But shall we catch him at it? If we do, can we avert the event? And even if the answer to both these questions were "Yes," would it be fair to ask so many children whose only trouble was pain in their limbs to pay for his mitral valve in terms of play, physical training, and faith in the soundness of their hearts?

Dr. Warin's policy, at present so widely followed, may perhaps save an occasional heart, but it seems to argue an almost complete lack of faith in the validity of clinical investigation, and I cannot believe that it makes for the health and happiness of the greatest number.—I am, etc.,

LINDSEY W. BATTEN.

Hampstead, N.W., March 7.

Treatment of Gall-stones

SIR,—I read the article on gall-stones by my former chief, Sir Lancelot Barrington-Ward (*Journal*, March 4, p. 431), with close interest. His findings command respect, especially with regard to cholelithiasis in children and the need for early operation in obstructive jaundice; patients are frequently sent to the surgeon when they are no longer "safe for surgery."

With regard to the opening of the common bile duct I find I am performing this more frequently as my experience lengthens (now nearly 500 cases). For teaching purposes I have formulated the following indications for exploration: (1) When patients have had jaundice within the previous one or two years. (2) When the attacks of colic have been associated with rigors. (3) When the duct is obviously distended. (4) When the duct is white instead of blue (Professor Flint). (5) When a stone is palpable in it. (6) When there is associated indurated chronic pancreatitis and the lower end of the duct cannot be surely felt.

I have never regretted opening the duct: unsuspected mud and stones have been found, and rigid narrowing of the ampulla of Vater has been revealed, although there was no previous jaundice present to suggest it. The additional step has not added to the mortality or to the length of stay in hospital, whilst it has restored patients to normal health and strength in three to six months in contrast to the usual six to twelve months after cholecystectomy.

My experience is in accord with Sir Lancelot's in treating acute cholecystitis expectantly, but with regard to the time of the subsequent operation I am delaying this from the conventional two, three, or four weeks until at least three to six months after the attack has settled. This step was arrived at because difficulties were met such as pus, not only inside but outside the gall-bladder, and also gross congestion, a month after all symptoms had subsided, frequently enough to embarrass the operation and to limit it to a partial procedure such as cholecystostomy. Therefore, unless further attacks of pain, jaundice, or rigors occur, I now advise medical treatment and defer surgery for several months after acute cholecystitis.—I am, etc.,

HAROLD DODD.

London, W.1, March 7.

Coal-gas Poisoning and its Prevention

SIR,—At the present time every effort is being made by the nations of Europe to conserve their man power, and for this purpose their nationals are being called home not only for the purpose of National Defence but to

engage in air raid precautions. In England and Wales at least 2,000 lives are lost yearly from coal-gas poisoning. The Registrar-General's returns give 1,961 deaths, but this does not include the unborn children of those poisoned by the gas.

The publication of the subject in the *British Medical Journal* (1923, **2**, 240) appears to have evolved only an academic interest in this country. In Germany, on the contrary, the subject was taken up vigorously, and extensive observations were made extending over several years in order to ascertain the symptoms produced by acute and chronic carbon monoxide poisoning. As a result of their investigations the gas works at Hamelin in Westphalia were equipped in 1935 with apparatus for producing detoxification of coal gas, and finally a company was formed with the title "The Non-Poisonous Gas Company, Ltd." Contrary, however, to the expectation that the gas thus produced would cost more, it was found that the operating costs of the gas-poison-removing plants were covered by the increased revenue of the undertaking, and other German gas companies are now installing detoxification plants. Among other economies it is found that when sulphur compounds and CO are removed the gas mains do not suffer so much from corrosion.

It seems strange that, although the sale of all other poisons is strictly regulated, gas containing a deadly poison (CO) may be freely supplied to householders. Parliamentary powers were, however, given to the Board of Trade by the Gas Regulation Act of 1920 to limit the percentage of carbon monoxide in gas supplied to the public.—I am, etc.,

Birmingham, March 8. E. B. HAZLETON, M.D., M.Ch.

On Prescribing

SIR,—Some of our older pharmacists aver that the medical profession can no longer prescribe. The assertion, I believe, refers more to the form of the prescription than to its content, though some misgivings have been expressed on this point also. Compared with the prescriptions of a few generations ago, when future practitioners were brought up on Pereira's *Selecta e Prescriptis*, many of those to-day are probably lacking in elegance and possibly in synergistic qualities; but the main change, if we exclude the prescribing of proprietary substances, is to a bilingual form. The battle for the use of the vernacular in the directions to the patient has long been won and the matter settled in a common-sense way. And nowadays, with Latin no longer compulsory for the entrance examination, the use of English throughout the prescription cannot be regarded as in any way unprofessional. Even the retention of the Latin superscription ℞ might be allowed for these cookery-book prescriptions, partly for past associations but mainly for the invocation supposed to be inherent in its tail. It does, however, seem to offend the rules of the game when some of the ingredients of the prescription are in English and some in Latin in the nominative case. Such monstrosities are probably formed without thought, but they do suggest a degree of illiteracy.—I am, etc.,

Tunbridge Wells, March 8. C. R. MARSHALL.

Placenta Praevia

SIR,—The report of the proceedings of the Section of Obstetrics of the Royal Academy of Medicine in Ireland (*Journal*, March 11, p. 530), in which a statistical review was made by Dr. A. H. Davidson of the results achieved by the three Dublin maternity hospitals during the past five years, showed that there was a total of 304 cases of placenta praevia with nineteen maternal deaths and 161 foetal deaths (54 per cent. foetal mortality).

An analysis of the foetal deaths showed that compression with the half-breech, which was the treatment employed in 179 cases, resulted in 105 foetal deaths (74 per cent. foetal mortality). Willett's forceps were used in thirty-eight cases with twelve foetal deaths (31 per cent. foetal mortality). Puncture of the membranes in thirty-six cases resulted in six foetal deaths (17 per cent. foetal mortality). The vagina was plugged in eleven cases with five foetal deaths (45 per cent. foetal mortality). Nineteen babies were born spontaneously with two foetal deaths (10 per cent. foetal mortality). Caesarean section was undertaken in twenty-four cases with one foetal death (4 per cent. foetal mortality). Of the infants lost 100, or about two out of three, had reached a stage of maturity which entitled them to methods of treatment aimed at reducing the foetal mortality.

While one should not be too ready to form conclusions from statistics based on unequal numbers of cases of differing degrees of severity, the strikingly low foetal mortality in the cases treated by Caesarean section stands out so clearly that it cannot fail to command attention (the maternal mortality was not stated). I feel that Caesarean section should be performed very much more frequently than it is at the present time in the treatment of placenta praevia. I believe the fact that it is not employed more often is attributable in some part to the praiseworthy attitude of mind which wishes for clear indications before employing the operation, but in this condition the indications are not clear-cut as they are in, say, gross disproportion. It is hard to conceive of circumstances to-day in which craniotomy performed on the normal living child could be justified. Are we justified, then, in employing methods which by compression of the placenta kill a large proportion of viable infants?

In the discussion which followed the review Dr. Bethel Solomons is reported to have suggested that when Caesarean section was employed the classical operation was the procedure of choice, and Dr. R. M. Corbet thought that when the placenta was situated on the posterior wall the lower segment operation had merits. I believe the lower segment operation to be the operation of choice, whether the placenta is situated on the anterior or posterior wall of the lower uterine segment. When the placenta is situated anteriorly the technique I have used is as follows:

A transverse incision is made through the lower uterine segment. It is rather shorter than that which is usually made, and is followed by very free haemorrhage, which completely obscures the field of operation. The first two fingers of the left hand are thrust into the centre of the incision and act as guides for the scalpel, which cuts through the placenta and opens the amniotic sac. With the two fingers still in position as guides, the scalp is grasped with Willett's forceps and traction made in an upward direction. This immediately stops the haemorrhage, and the incision is enlarged and the operation completed with an uninterrupted view of the field of operation.

The advantages of the lower segment operation in cases of placenta praevia are: (1) sepsis, which not infrequently supervenes on the low placental site, is not so likely to spread to the peritoneal cavity; (2) post-partum bleeding from the placental site is revealed to the operator and can be controlled by hot packs, etc., whereas when the classical operation is employed there may be considerable unseen haemorrhage which escapes down the vagina and is only revealed at the end of the operation, when the patient is found to be lying in a pool of blood; (3) in a subsequent pregnancy there is no scar in the upper segment to be eroded or ruptured. In conclusion, I think

that the institution of a blood storage bank in Dublin will help to reduce the maternal mortality in placenta praevia. The Meath Hospital is to be congratulated on this innovation.—I am, etc.,

Harrogate, March 11. TERENCE ROBINSON.

A Complicated Pregnancy

SIR,—The interesting features of this case were the large bilateral swelling of both parotids, the high blood pressure, the enlargement of the ovary, and a superimposed acute toxaemia of a 4½-months pregnancy, the immediate fall in the blood pressure after delivery and the return of the ovary to its normal size. The patient was a married woman aged 23.

From the age of 2 until 7 she had periods of repeated sickness. At 11 she suffered from scarlatina, was treated in hospital, and discharged at the end of six weeks without having suffered from complications. No other ailments except measles. In 1936 the patient (being a nurse) tested her own urine and discovered a considerable amount of albumin present. No other urinary complications.

Date of last menstruation, June 19, 1938. So far as pregnancy went the patient was well, without headaches, sickness, or oedema. There was some nocturnal frequency and dysuria but no change in the appearance or volume of urine. On November 16 she began to feel dizzy and sick, with diminution of vision, and pain in the abdomen situated in the right hypochondrium. During the next three days there was further diminution of vision and continued sickness. On November 20 the patient was admitted to hospital, and on examination had almost complete loss of vision, abdominal pain, restlessness, and was slightly delirious. Apart from these symptoms she appeared a well-developed healthy woman. Blood pressure 260/160; pulse 82. There was tenderness in both iliac fossae. The same evening the membranes were artificially ruptured. Next day the patient was in great pain, restless, semi-delirious, practically blind. Small urinary output. The patient was seen by Dr. George Allan, physician, Glasgow, who found well-marked bilateral swelling of the parotid region, which had become acutely swollen in the short period of four hours. Dr. Allan reported: "The heart is definitely enlarged, rate accelerated (115), blood pressure 270/170. Albumin in the urine and tube casts, mostly of the blood variety. Examination of the fundi reveals haemorrhages and degenerative spots. Abdominal examination reveals localized tenderness between the right side of the uterus and Poupart's ligament, where an irregular nodular mass the size of a tangerine orange was felt. The renal condition seems to be an acute exacerbation of chronic nephritis. Treatment suggested—venesection and hot packs."

The foetus was expelled on November 22 and the placenta on the 23rd, when the parotid swelling began to go down. The right eye was a little bloodshot. Blood pressure 175/110; pulse 110. The patient made a good recovery, blood disappeared from the urine, blood pressure fell to 165/80; albumin, a very faint trace.

—We are, etc.,

H. J. THOMSON, M.D., M.C.O.G.,
Physician Superintendent.
JAS. P. O. ERSKINE, M.B., Ch.B.

County Maternity Hospital, Bellshill, Lanarkshire, March 3.

Treatment of Eclampsia

SIR,—Will you allow me a few more words, and all London may curse me, and I shall not trouble you again.

Dr. Rufus C. Thomas has done nothing to prove his original contention, which I opposed, that it is correct procedure to induce labour where he has failed to reduce the blood pressure from 90 or over, with or without albuminuria, after ten days' treatment—treatment which he vaguely describes as "the usual dietary and other treatment." I do not, as he seems to labour in his correspondence, make little of the importance of a raised diastolic blood pressure during pregnancy. I have simply tried to show, and have successfully shown, that its danger can be overcome by such medical measures as can be undertaken by a rural physician in the patient's own home without risk to her or her baby. Casting doubts upon my records, or quoting others who approve his methods, does not make the case of Dr. Thomas stronger. Let Dr. Thomas and his friends quote, with a description of their treatment, 100 cases out of the multitude which they seem to have where properly carried out medical means have failed; aye, even one case, and they will make me think. I know the majority of my cases intimately, many from childhood, have confined them, and, in several cases, confined their children also, and I have careful records of them all. Surely I am justified in fighting thus for what I believe is the lives of our women and children.

Regarding the cases quoted from the *Caledonian Medical Journal*, they point the moral of ante-natal examination from the earliest possible moment after a woman is pregnant, and the daily examination of her urine by every pregnant woman. Had I seen these cases sooner, by even seven days, both mothers would have been alive to-day, and, judging by my other cases, both would have had healthy babies. The second mother, in spite of her internal accidental haemorrhage and uraemia almost nine years ago, is very fit.—I am, etc.,

Tain, March 5. E. K. MACKENZIE.

*** This correspondence is now closed.—ED., *B.M.J.*

Oesophageal Foreign Bodies

SIR,—The case reported by Mr. C. S. Abraham in his letter in the *Journal* of March 4 (p. 475) serves to emphasize some of the dangers of foreign bodies that become impacted in the upper food passages. Although the work of Chevalier Jackson and others has shown that such dangers should be potential rather than actual, this is the second fatal case of a coin in the food passages that I have seen reported this year. In each case the fatal issue has been attributed to delay, and the question naturally arises as to how long it is safe to leave a foreign body in the oesophagus before attempting to remove it. It is certain that a foreign body impacted in the oesophagus should be removed by a trained endoscopist without unnecessary delay. This does not mean that at all costs some sort of attempt must be made at removal, because this type of work can be very dangerous in unskilled hands, and it is far safer to delay removal of an impacted foreign body until the patient can be dealt with by those who are trained in this work, rather than to submit him to unskilled hands using unaccustomed or inappropriate instruments. To do this may be to make the cure worse than the disease.

Naturally, to a certain extent the danger of delay is governed by the nature of the foreign body. Large fish-bones, rabbit bones (a favourite foreign body), dentures, and other sharp-pointed articles are far more likely to perforate the oesophagus than a rounded object such as a coin. Whatever the nature of the foreign body, it is wiser to put every case in touch with a trained endoscopist at the earliest possible moment. This may sometimes involve considerable trouble and disturbance, and the medical attendant will naturally wish to be reasonably sure of his diagnosis before taking such a step. In the case of metallic and other markedly radio-opaque foreign bodies this is easily done by taking a radiograph in the antero-posterior and lateral positions. Bones, however, are rarely shown up clearly by *x* rays, and no reliance at

all should be placed on a negative report. Here the history and physical signs are of the greatest help. Small fish-bones, as of the herring or kipper, are rarely dangerous and do not call for immediate endoscopic investigation. Larger fish-bones, bird, rabbit, and meat bones should be treated seriously. They nearly always become impacted in the cervical oesophagus, being anchored by the contraction around them of the powerful cricopharyngeal sphincter. Thus palpation of the oesophagus just below the larynx may reveal a tender spot, and movement of the larynx from side to side may cause discomfort. A valuable physical sign is the wince of pain that follows every swallowing movement when there is a sharp-pointed foreign body digging into the oesophagus. Such cases as these must not be ignored, and they urgently call for removal under direct view, no matter how inconvenient it may be for all concerned.

Coins the size of a halfpenny can pass through the gastro-intestinal tract with ease even in a child of two years of age. In fact not the least claim for urgency in the removal of a coin impacted in the oesophagus is that it may pass on into the stomach before it can be removed perorally. It is often said that the passage of foreign bodies through the gastro-intestinal tract is assisted by the addition of bulky foods or even of foreign bodies like cotton-wool to the diet. I think that the least stormy passage is likely to be in the company of normal intestinal contents. Sudden alteration of a dietary, or the addition of further foreign bodies, may only serve to increase the peristaltic movements and make the passage of the foreign body more hazardous.—I am, etc.,

London, W.1, March 6. TERENCE CAWTHORNE.

Hormone Treatment of Undescended Testicle

SIR,—The experience recorded by Dr. M. F. McElligott in the *Journal* of March 4 (p. 446) prompts me to mention some related observations.

During 1937 and 1938 I had occasion to treat various cases of undescended testes with anterior pituitary hormone (pregnyl), and observed many satisfactory results. The patients, all between the ages of 11 and 15 years, were out-patients of the Royal Victoria Infirmary, Newcastle-on-Tyne. In every case there was appreciable penile enlargement but no observable psychological change. The usual amount needed for bilateral descent from positions in the inguinal canal was about 8,000 rat units, given as 500 R.U. bi-weekly. Often there was a temporary halt when the testis reached the position of the external inguinal ring, and then further injections were followed by pain in the groin together with a redness and swelling of the area about the affected testis. In successful cases this reaction would suddenly disappear as the testicle literally fell into the scrotum, either to the maximum extent or so far as to call for only a further 500-R.U. dose. It appeared as if the testis had had almost a physical struggle to pass the external ring.

Eventually I stumbled upon an instructive case. A boy of 14 (in the hospital for rheumatism) complained of a painful swelling in his right groin. This was not apparent on first examination. The boy was asked to cough, when the lump reappeared. It was the right testis, which could be pushed from the position near the external ring back into the scrotum. The testicle could be returned to the canal by a hard cough. The affected testicle was maldescended, being at the root of the scrotum. It appeared to me that the testicle was drawn up into the inguinal canal above the external inguinal ring and failed to redescend into the scrotum when the patient relaxed—a case of recurrent incarceration of a testis in the inguinal canal. These attacks ceased and could not be brought on after the administration of 1,500 R.U. of pregnyl had resulted in full testicular descent. I now wondered whether non-descent of the testicle might be associated with, although not due to, a narrow external inguinal ring.

With this in mind I decided that in the next treated case where the testis had come down the canal but stubbornly refused to pass the position of the external ring I would enlarge the ring and then give more hormone without further operative procedure. I did have such a case, and operated. The testis was enclosed in a moderate hydrocele, which was removed. It seems possible that this hydrocele had resulted from the irritation which is observable when the testis is refusing to descend in spite of continued hormone therapy. In view of the unexpectedly extensive operative intervention it was thought best to bring the testicle down into the scrotum, and this was done without difficulty. At this stage I ceased to have facilities for the work, but it seems to me that there is possibly a field for a plan of therapy such as: (1) anterior pituitary until full descent or persisting non-descent beyond external ring; (2) enlargement of external ring under local anaesthesia; (3) further hormone.—I am, etc.,

Wakefield, March 8. G. R. PEBERDY, M.B., M.R.C.S.

Symmetrical Peripheral Gangrene with Low Blood Pressure

SIR,—A case of symmetrical peripheral gangrene in cardiac failure resulting from high blood pressure has been reported by Perry and Davie in the *British Medical Journal* of January 7 (p. 15). A similar case, equally interesting in its clinical symptoms and as puzzling in its pathogenesis, has come under my observation, and I report it by permission of Dr. E. S. Brohier, medical officer in charge of this hospital, in the hope that it may throw some light on the end-results of low blood pressure.

An active labourer aged 42 was admitted to the Government Hospital, Nuwara Eliya, Ceylon, on November 30, 1938, with a history of having fainted that morning. He had remained unconscious for about one hour after the faint, then walked home a distance of about 200 yards. He was then brought to hospital. On admission he was conscious, but could not give a clear history at the time, but did so later. He had no pain, external injury, or deformity over the spine. The heart was not enlarged, but the sounds were very feeble and the rate was 52 per minute. The lungs were clear and the blood pressure was 80/60. The patient was treated with half an ounce of brandy four-hourly, glucose water freely, and a stimulant mixture one ounce t.d.s.

On December 4 the patient complained of a feeling of faintness; the blood pressure was still 80/60 and the pulse rate 44. Next day he complained of a feeling of weakness in the lower limbs. On examination active movements of the legs were painful and limited, the legs were cold, slightly swollen, and distinctly bluish. Reflexes and sensations were diminished. The pulse rate was 64, the volume and tension being poor. These symptoms and signs progressed daily, and on December 8 the line of demarcation between the healthy portion and the bluish swollen part of the leg was very distinct below each knee.

Injections of strychnine sulphate grain 1/32 were given six-hourly, but soon blister formation with infection and gangrene set in over both feet and legs as high up as the knee, and was very extensive in the course of three days. On December 9 the blood pressure was 80/56 and the pulse 68. On December 12 the patient could not pass urine, and the bladder had to be relieved once with a catheter, but he was able to pass urine and faeces normally after that. The gangrene was more extensive, gradually spreading up, and on December 14 the

patient died. He was conscious during his illness, took his feeds well, and had no incontinence at any stage. The urine showed no abnormality, and there was no fever.

Post-mortem examination was not consented to by the relatives, and so the case was robbed of scientific accuracy and detail.

Here is a patient with a persistent low blood pressure developing suddenly and, for no other apparent reason, symmetrical peripheral gangrene of both feet and legs. The absence of any pain, tenderness, or deformity over the lumber dorsal spines removes any suspicion of a fracture-dislocation of the spine. The low blood pressure, which obstinately refused to rise in spite of all treatment, associated with the slowly beating feeble heart, appears to be the primary cause of the gangrene. Considering how very little we know about low blood pressure and its dire results, this case, though lacking in scientific accuracy and thoroughness, is still not without clinical interest.—I am, etc.,

Nuwara Eliya, Ceylon, Feb. 20. STANLEY DE SILVA.

Emergency Treatment of Fractured Spine

SIR,—The description by Mr. Geoffrey Hyman in the *Journal* of March 4 (p. 444) of a special stretcher for fracture of the spine makes interesting reading. As a routine first-aid method, however, for use in any circumstances, it seems to me that placing a rolled-up blanket under the site of suspected fracture of the dorsal or lumbar spine has much to recommend it. The patient may, in addition, be firmly fixed to the stretcher by bandages carried round thorax and stretcher, and thigh and stretcher, respectively. This procedure, with all the advantages of the supine position, is simple enough, both for first-aid teaching and practice, to warrant its more general adoption.—I am, etc.,

Denbigh, March 8. D. G. DUFF.

Meckel's Diverticulum in Intussusception

SIR,—I was very interested in Mr. Milroy Paul's article on intussusception due to inverted Meckel's diverticulum in the *Journal* of March 11 (p. 504), especially his statement that no case had been reported where the apex reached the rectum. Some months ago I operated upon an intussusception in an infant with all the classical symptoms, and on rectal examination the head of the tumour was easily felt, with what appeared to be a polyp as the leading portion. At operation the condition was easily reduced, but it was found that the entering part of the ileum was about twelve inches further from the ileo-caecal valve than is usual, and then the invaginated Meckel's diverticulum disclosed itself. This reduced for half its length, but the distal end would not come out, so the diverticulum was excised from the ileum, the latter being repaired in the usual manner. On examination of the diverticulum, some three inches long, the invaginated portion was found to be much swollen and almost black in colour.

This very interesting specimen has been mounted.—I am, etc.,

London, W.1, March 11. D. DENHAM PINNOCK.

Vitamin D in Dietetics

SIR,—The letter on vitamin D in dietetics which appears over the signature of the general manager of British Cod Liver Oil Producers Ltd. in your issue of March 4 (p. 476) calls for some comment from the producers of fish-liver oils other than the special brand of cod-liver oil produced by Mr. K. MacLennan's company. Otherwise there is a danger that your readers may infer that all fish-liver oils other than this particular product are of necessity derived from livers stale and deliquescent in decay. Most certainly that is not the case with the leading brands of halibut-liver oil. It is true that halibut oil (unlike cod-liver oil) cannot be extracted on board ship by steaming the livers. Instead, the livers have to be preserved by freezing them, and the oil is extracted ashore at the factory. But no deterioration in the quality of the oil has ever been demonstrated to result from the method of preserving the livers, and halibut oil so prepared is definitely a "fresh food oil" prepared from the freshly frozen livers of newly caught and gutted fish.

I certainly agree with Mr. MacLennan that the low content of the *B.P.* malt and oil preparation is a drawback, and a very real drawback, to ensuring an adequate dosage of vitamin D. In this connexion, too, it is interesting to note that the Chief Medical Officer to the Board of Education, in his report for 1937 (p. 122), quotes Mr. Seddon's view that the continued prevalence of rickets among school children is due in part to the mistaken trust put by parents in such "low-potency" malt and oil preparations. But I would go further in this direction than Mr. MacLennan will probably care to follow me. I would say that a low intake of "high-potency cod-liver oil" in capsules (affording only the *B.P.* minimum dosage) operates in the same way as a low dosage of oil in combination with malt extract. Recent investigations have shown that a daily intake of 800 international units of vitamin D, for example, is necessary for children, particularly at this season. I would say that an adequate dosage of vitamins A and D can only be administered economically and palatably in capsule form by the use of "high-potency fish-liver oils" of much higher vitamin values than "high-potency cod-liver oil."—I am, etc.,

J. I. M. JONES,
Technical Manager, British Colloids Limited.

*** We cannot prolong this discussion—ED., *B.M.J.*

History of Lithotomy

SIR,—Many must have read Mr. W. Sampson-Handley's Hunterian oration published in your issue of February 18 (p. 313) with much pleasure and profit. There is one point I would like to raise. The lecturer states that John Douglas practised the suprapubic operation for stone for seven years and that this operation was replaced by Mr. Cheselden's lateral operation. "Mr. Cheselden is much less sollicitous for the credit of being an inventor than he is to have his operation understood and practised in a right manner." (This was about the year 1723.)

This statement gives the impression that Mr. Cheselden was the first to do the lateral stone operation. But I read in the life of Mr. Pepys, written by Mr. Bryant in *The Man in the Making*, that Mr. Pepys "on March 26 1628 made himself ready for the knife and swift burning pain and was cut for the stone by Mr. Hollier of St. Thomas Hospital. Mr. Hollier was a master of his craft in that year he cut 30 for the stone and all lived, though soon after 4 others, whom he also operated, perished." From this it appears that operation for stone was fairly frequently and successfully done sixty-five years before Mr. Cheselden's time. It does not state whether these operations were lateral or suprapubic.—I am, etc.,

Deal, March 5. G. T. BIRDWOOD.

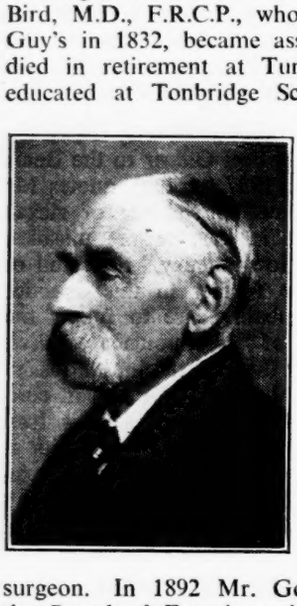
Obituary

C. H. GOLDING-BIRD, M.B., F.R.C.S.

Consulting Surgeon, Guy's Hospital

The death of Mr. C. H. Golding-Bird, which took place at his home in Meopham, Kent, on March 6 at the ripe old age of 90, breaks a link which had lasted for more than a hundred years between his family and Guy's Hospital.

Born in London on July 7, 1848, Cuthbert Hilton Golding-Bird was one of the five children of Golding Bird, M.D., F.R.C.P., who had entered as a student at Guy's in 1832, became assistant physician in 1843, and died in retirement at Tunbridge Wells. Cuthbert was educated at Tonbridge School and at King's College, London, graduating B.A. in 1867. In 1868 he entered at Guy's Hospital Medical School, took the M.B. degree of London University in 1867. In 1868 he entered diploma in the following year; and after postgraduate study in Paris returned to Guy's as a demonstrator of anatomy and later he became lecturer in physiology. In 1875 he was elected to the staff of the hospital as assistant surgeon, and in time became full surgeon and lecturer on clinical surgery, and afterwards consulting surgeon. In 1892 Mr. Golding-Bird was appointed to the Board of Examiners in Physiology for the Fellowship of the Royal College of Surgeons; from 1897 to 1907 he was a member of the Court of Examiners; and from 1905 to 1913 he served on the Council of the College. He was one of the earlier members of the Central Midwives Board for England and Wales, and after retiring to Meopham became chairman of the Kent County Nursing Association. He had also been consulting surgeon to the Gravesend Hospital, to the Royal School for Deaf and Dumb Children at Margate, and to the Royal Female Orphanage at Beddington, near Croydon. In his days of active practice he contributed articles on surgical subjects to journals and systems of surgery. He was the author of a *History of the United Hospitals Club* (St. Thomas's and Guy's), and in retirement wrote *The Story of Old Meopham*. In 1870 he married Florence, daughter of Dr. John Baber, a well-known Kensington practitioner. He had been a member of the British Medical Association since 1873.



We are indebted to Sir William Hale-White for the following personal appreciation.

Golding-Bird's life was sad. Shortly after he became assistant surgeon to Guy's he married a charming and beautiful wife, the future appeared bright, but soon she became ill and for many years she was an invalid confined to bed. When he was getting towards 60 she recovered. The tragedy was that had medical knowledge been then what it is now she could have been quickly cured. Ill-health seemed to dog the family, for his father, the brilliant assistant physician to Guy's, who would have attained a fine position in the profession, had, after long suffering, died of rheumatic endocarditis at the age of 39. Poor Golding-Bird struggled manfully with his misfortune, he was unflagging in his hospital work and his teaching, he served as Examiner and Councillor at the College of Surgeons, but his life in London had been so unhappy that the day after his retirement from Guy's he and his wife went to live at their house in Meopham.

He operated beautifully, for he had marvellous manual dexterity; an illustration of the microscopic structure of the retina, from a section which he cut by hand with a razor, has appeared as an illustration in *Quain's Anatomy* from the time he cut it to the present day. His collection of clocks of intricate mechanism was a great pleasure to him, for he used to pass his evenings taking them to pieces and putting them together again. The parts of surgery which interested him most were those in which his mechanical ingenuity and skill had play. Thus his opinion was much sought for cases of spinal deformity; he was one of the first to treat ulcerative colitis by opening the appendix and washing the large bowel through; and he designed an apparatus which was an improvement on a tracheotomy tube, for it gave a wide opening through which membrane could be coughed up in the days before the discovery of diphtheria antitoxin.

Being very fair he always looked youthful. A woman with a bad compound fracture of the leg lay in one of his beds; he kindly explained to her that he would have to amputate. She replied: "Have my leg cut off by a youngster like you? Certainly not; he can do it, if you like." She had pointed to the house-surgeon. His name embarrassed some of his hospital patients. I met a man in the Colonnade of the hospital who asked me to direct him to Mr. Golden Pheasant. After his retirement he continued to work at his clocks, he devoted great attention to his garden, he served on local committees, and studied the parish church of Meopham, of which he published a history so good that it had the distinction, rare among such books, of reaching a second edition. Meeting his professional brethren gave him much enjoyment. When he was over 80 he came to town to preside at a dinner of the United Hospitals Club; he made a long and admirable speech on the history of the Club, about which he afterwards published a book; he stayed till the dinner ended, well after eleven, he took a cab to Charing Cross, thence by train to Gravesend, where his car met him and he arrived home after one, none the worse for his trip, which he had made all alone. Lastly, his kindness to others in trouble was very great: he never talked about it, so it was not widely known, but there are those who owe much to him; this, with the fact that he never complained, made him one of the most lovable of men.

Dr. S. A. E. Griffiths (Southfleet, Kent) writes:

Since his retirement to his beloved country house at Meopham Mr. Golding-Bird, though never physically strong, enjoyed a happy and peaceful life. Apart from his profession he had many and varied interests. Most mornings he would be found working in his beautiful garden, and I have seen him busy with his gardeners mending fences and gates. He was an ardent archaeologist and a member of the Kent Archaeological Society, and spent time and money in collecting many valuable and unique treasures, until his house became a veritable museum. His book, *The Story of Old Meopham*, and a later edition, *The History of Meopham*, is a memento of his energy and a digging into the past. He was a keen horologist, and at noon to hear all the clocks in his house striking the hour was an experience. Years ago he did some very fine photography, and I have seen him delicately

and beautifully painting the lines of the developed negative. His knowledge and experience were so extensive that it seemed impossible to start any subject with which he was not fully acquainted. He was a strong Churchman, and at one time served as churchwarden, both in London and in Meopham. I have lost a great and generous friend of nearly forty years' standing, and I am under a lifelong obligation for his many acts of kindness and assistance. He was always most pleased to see with me any difficult surgical case, and his diagnostic acumen was sometimes uncanny. He possessed the wonderful faculty of instilling confidence, and if he said a certain course should be adopted there could be no other. He would never accept a fee for his services. Some two years ago he developed angina and asthma attacks with most distressing dyspnoea, and although his mind was as active and subtle as ever he was unable to do any physical work as gardening, and had to spend a sedentary life.

[The photograph reproduced is by Elliott and Fry, Ltd.]

G. BASIL PRICE, C.M.G., M.D., F.R.C.P.

Dr. George Basil Price, who died suddenly on March 10, was born at Bristol on June 6, 1871, the youngest son of Samuel Newell Price. He had a highly successful career at the Bristol Medical School (where he was gold medallist, scholar, and prizeman) and at St. Bartholomew's Hospital. After qualifying with the English conjoint diplomas he graduated M.B. (first-class honours in midwifery) and B.S. at London University in 1896, proceeded M.D. in 1898, and took the D.P.H. in 1901. He became M.R.C.P. in 1907 and was elected F.R.C.P. in 1920. Dr. Price's earlier appointments were resident medical officer at the London Temperance Hospital, pathologist to the Prince of Wales's Hospital, Tottenham, and physician to the Mount Vernon Hospital at Hampstead. He was a past vice-president of the Tuberculosis Association and of the Royal Society of Tropical Medicine. His distinguished war service and his work for Livingstone College are referred to in the appreciations printed below. He had been a member of the British Medical Association since 1897.

Dr. Alfred E. Carsberg writes: Since the first year of the great war I was privileged to enjoy a close friendship with Basil Price, who devoted a large proportion of his time to the service of his fellow men. His career as a temporary officer in the R.A.M.C. was remarkable. He arrived in Malta as a lieutenant, was shortly promoted to the rank of captain, and by 1918 he was lieutenant-colonel with the local rank of colonel and the charge of a military hospital of 1,800 beds. Although essentially a clinician, he spared no efforts to become conversant with the intricacies of the administration of an army hospital. For some months he was also acting consulting physician to the Malta Command; for his services during the war he was awarded the C.M.G. After the armistice he was on the staff of the Ministry of Pensions for many years as consultant medical adviser. On his retirement on reaching the age limit three years ago he did not settle down to enjoy his well-earned leisure as others would have done. Last year he went to Palestine for three months and took duty at the hospital at Hebron. For years he had wished to visit the Holy Land, and when the opportunity occurred he did not hesitate, in spite of the unsettled state of the country and the arduous work it involved. During the last few years he lived on the outskirts of Poole and took an active part in the St. John Ambulance Brigade and A.R.P. and many other kindred interests, and his work in these directions was becoming increasingly heavy. Very many of his friends and acquaintances were glad to avail themselves of his skill and knowledge, of which he was always ready to give freely; he never spared himself in spite of the fact that he had never been a robust man.

Dr. L. E. Wigram writes: As a colleague of the late Dr. G. Basil Price for many years I should like to pay tribute to the love and esteem for him and thankful remembrance of his work which will be going up from the hearts of his old pupils in many countries where they are still working as missionaries or are in retirement. Some six years after Dr. Price's brilliant career at the Bristol Medical School he joined the staff of Livingstone College, where his able lectures and tuition in medicine and hygiene to lay missionaries going abroad were much appreciated during the thirteen years when he was giving the major part of his time to this work. He and his wife took the greatest interest in his pupils, receiving them at their home across the garden of the college and following their future work abroad with real interest. This work and that of physician to the London Missionary Society in the latter years was interrupted by the great war, when he accepted a commission and left for Malta. He maintained throughout his life his connexion with the college as a member of its committee, taking a continued interest in its work and that of its former students.

ANTOINE BÉCLÈRE

Dr. Antoine Béclère died in February at the age of 82 in his home in Paris. His hospital career in the early 'nineties was at first exclusively associated with microbiological research, but when, in 1896, the discovery of the *x* rays was announced he threw himself heart and soul into research in this new field, and henceforth the history of radiology has been inextricably associated with the life history of Béclère. In his latter years he was tempted to return to his old love, but his claims—and they are substantial—to a place in the history of medicine must assuredly rest almost exclusively on his radiological work. Of particular importance were the papers he published in 1908 on the *x*-ray therapy of tumours of the hypophysis and of uterine fibromata. He was the founder of the Société de Radiologie Médicale de France and of laboratories in which he taught medical radiology gratuitously. In 1908 he was elected to membership of the Academy of Medicine, and in 1928 he was its president. Three years later he organized and presided over the third International Congress of Radiology in Paris. Also in 1931 he was made an Honorary Fellow of the Royal Society of Medicine. During the great war he was director of the radiological laboratory of the Val-de-Grâce military hospital in Paris.

Dr. JOHN HENRY HARRIS, who died at Paignton on February 24, was a genial and cheery practitioner who brightened the sickroom and eased the burdens of suffering. He was born in London, and in 1878, at the age of 17, was one of the few survivors of the *Princess Alice* disaster in the Thames. Fifty years ago (after qualifying as M.R.C.S. and L.S.A.) he began practice in Dartmouth, and became later the medical officer of health and medical officer to the Port Sanitary Authority. He took the M.D. degree at Durham in 1901. Always a keen Territorial, he served four years during the great war, although his age might have procured his release had he so wished. During his early days of practice Dr. Harris used to visit country patients on horseback, but he soon changed with the coming of the motor-car, and his was the first car to enter Dartmouth. He continued in practice till well over the age of 70, and afterwards his well-built and sturdy figure

became familiar to many in Paignton, where he was ever ready to chat with acquaintances and to make shrewd remarks on the humours of life. He told the writer of this note that he regarded longevity as a penalty reserved by Providence for sinners, but it was evident to his friends that he was enjoying this punishment. For forty-four years he was a member of the British Medical Association, but never took a very active part in the local deliberations. His death leaves a gap in a wide circle which will be hard indeed to fill.

The death of Dr. ROBERT JENNINGS HUSTON at his home in Carrickfergus on March 4 came as a great shock to his friends, as he was only in his early thirties. Dr. Huston was a student of Queen's University, Belfast, and qualified M.B., B.Ch., B.A.O. in 1930 after a successful university career, in which he distinguished himself by his natural aptitude for the profession which he was to follow. Soon after he qualified he was called upon to succeed his father, the late Dr. James Huston, in an extensive practice in and around Carrickfergus. The son excelled in maintaining the high standard set by his father. Those who were his patients had a continuity of family interest and connexion which made Jennings Huston a much-desired family doctor. His outlook was broad, his knowledge up-to-date, and his skill far above the average, so that there appeared to be many years before him in which he could exercise his obvious talents. He was interested in all that was likely to be helpful to his patients, attended medical meetings, and met his colleagues socially and otherwise on all available occasions. He was a fellow of the Ulster Medical Society and a useful member of the British Medical Association. He leaves a widow, with whom there is widespread sympathy.

Dr. BERNARD RELTON, who died on March 6 at the age of 78, had been the senior member of a leading practice at Rugby, where he began many years ago as junior partner with the late Dr. James Herbert Simpson of Hillmorton Road. Educated at Merchant Taylors' School, he won a leaving exhibition and joined St. Thomas's Hospital Medical School with an entrance scholarship in 1879, and qualified as L.S.A. in 1884 and M.R.C.S. in 1885. At St. Thomas's he served as house-surgeon and assistant demonstrator in practical surgery, and contributed a paper on acute glossitis to the *Lancet*. While in active practice at Rugby Dr. Relton continued to take a keen interest in surgical work, though he was not a member of the visiting staff of the Hospital of St. Cross; he held, however, the appointments of medical officer to the Rugby Provident Dispensary and surgeon to the Midland Railway Friendly Society, and with Mr. Haslam of Birmingham published a case of trephining for paralysis due to meningeal haemorrhage. He was a past president of the Rugby and District Medical Society, and at the time of his retirement had been a member of the British Medical Association for nearly thirty years. The funeral service was held at the Parish Church, Rugby, on March 10.

We regret to record the death in a nursing home in Belfast of Dr. DAVID MAXWELL CLEMENTS of Toomebridge, Co. Antrim. Dr. Clements was a student of Queen's University, Belfast, where he graduated M.B., B.Ch., B.A.O. in 1915. He eventually settled in practice in Toomebridge, being the dispensary medical officer of Toome, and attracted a wide circle of patients there. He was genuinely interested in his work and a keen student, as evidenced by his degree of M.A.O., which he obtained in 1922. Patients regarded him as their friend and counsellor, and no one ever appealed for his help or advice in vain. The sympathy of a wide circle of friends is extended to his widow and family.

Dr. ARTHUR DONALDSON SMITH, physician and explorer, died in Philadelphia on February 18, aged 74. He is believed to have been the first white man to enter the region between the Somali coast and Lake Rudolph in Africa under the auspices of the Royal Geographical Society in 1894 and 1895.

The Services

ROYAL AIR FORCE: COMMITTEE ON MEDICAL ASPECTS OF FLYING

The Secretary of State for Air, on the recommendation of the Director of Medical Services, Royal Air Force, has appointed a standing committee to investigate and advise him on the medical aspects of all matters concerning personnel which might affect safety and efficiency in flying:

The committee will be constituted as follows:

Sir Edward Mellanby, K.C.B., M.D., F.R.S., F.R.C.P., K.H.P. (Chairman).
Professor F. C. Bartlett, M.A., F.R.S.
E. A. Carmichael, M.B., F.R.C.P.
C. S. Hallpike, F.R.C.S., M.R.C.P.
B. H. C. Matthews, Sc.D.
Sir John Parsons, C.B.E., F.R.S., F.R.C.S.
Professor L. J. Witts, M.D., F.R.C.P.

The representatives of the Air Ministry on the committee will be:

Air Vice-Marshal A. V. J. Richardson, C.B., O.B.E., K.H.S., Director of Medical Services, R.A.F.
Air Commodore H. E. Whittingham, C.B.E., F.R.C.P.Ed., K.H.P.

ROYAL NAVY MEDICAL CLUB

The twenty-fifth annual dinner of the Royal Navy Medical Club will be held at the Trocadero Restaurant (Empire Suite), Piccadilly Circus, W., on Wednesday, April 12, at 7.30 for 8 p.m. Particulars can be obtained from the honorary secretary (Surgeon Commander C. H. M. Gimlette, R.N.), Medical Department, Admiralty, S.W.1. Medical and dental officers who are serving or have served in the Royal Navy or Royal Naval Volunteer Reserve are eligible for membership of the club.

NAVAL MEDICAL COMPASSIONATE FUND

A meeting of the subscribers to the Naval Medical Compassionate Fund will be held on April 12, at 3.15 p.m., at the Medical Department of the Navy, Admiralty, S.W.1, to elect six directors of the Fund.

DEATHS IN THE SERVICES

Lieutenant-Colonel LAURENCE AUSTIN WADDELL, C.B., C.I.E., LL.D., Bengal Medical Service (ret.), died in the latter part of 1938, aged 84. He was born on May 29, 1854, the son of the Rev. Thomas Clement Waddell, D.D., of Cumbernauld, Dumbarton, and was educated at Glasgow University, where he graduated M.B., C.M., with first-class honours, in 1878. Subsequently his university gave him the degree of LL.D. in 1895, and the Royal Faculty of Physicians and Surgeons of Glasgow conferred on him an honorary fellowship in 1930. After filling the post of resident surgeon at the Western Infirmary, Glasgow, in 1879, he entered the Indian Medical Service as surgeon on March 31, 1880, became lieutenant-colonel after twenty years' service, and retired on October 21, 1906. He was an officer who made a mark in India and earned a considerable reputation, though in directions which were not strictly medical. After the usual two years' service in the Army he entered civil employ in Bengal. From 1884 to 1890 he acted as professor of chemistry in Calcutta; in 1890 he was appointed a deputy sanitary commissioner in Bihar, a light appointment which gave him ample time for his archaeological pursuits, and he held that post for the rest of his service, with several intervals of deputation on special duty and on active service. He had the reputation for many years of being the most skilled archaeologist in India, and excavated the ruins of Pataliputra, Asoka's ancient capital, and discovered the birthplace of Buddha, near Surajgarh, in the Monghyr district. He also travelled extensively in Sikkim, in the Himalayas, and in Tibet, and was supposed to have more knowledge of Tibetan than any other officer in India, a fact which earned him the nickname of "The Lama" and also led to his appointment as professor of Tibetan in University College, London, after

his retirement in 1906, a post which he held for some years. Later on he was greatly interested in the long-dead-and-gone Indo-Sumerian civilization. He had a long list of war service: Burma, 1886–7, operations of the second brigade, Wuntho Expedition, medal with clasp; North-West Frontier, Chitral Campaign, 1895, relief of Chitral, medal with clasp; China War, 1900, as senior medical officer at base, and later at Peking, mentioned in dispatches, *London Gazette*, May 14, 1901, medal with clasp, and C.I.E. on July 24, 1901; North-West Frontier, Waziristan Campaign, 1902, clasp; Tibet, 1904, as principal medical officer, occupation of Lhasa, mentioned in dispatches, *London Gazette*, December 13, 1904, medal with clasp, and C.B. on December 16, 1904. He was also the author of numerous works, some of them of an abstruse type: *Researches in Snake Venom*, 1888; *Discovery of Asoka's Classic Capital of Pataliputra*, 1892; *The Birds of Sikkim*, 1893; *The Buddhism of Tibet*, 1895; *The Discovery of the Birthplace of Buddha*, 1896; *Among the Himalayas*, 1899; *The Tribes of the Brahmaputra Valley*, 1900; *Report on Excavations at Pataliputra*, 1903; *Lhasa and its Mysteries*, 1905; *The Indo-Sumerian Seals Deciphered*, 1925; *The Phoenician Origin of Britons*, 1926; *Sumer-Aryan Dictionary*, 1927; *Makers of Civilization in Race and History*, 1929; *The British Edda*, 1930; *Egyptian Civilization: Its Sumerian Origin*, 1930; *Trojan Origin of Civilization of the World*, 1938. He also edited the second, third, and fourth editions of Lyons's *Medical Jurisprudence for India*, 1902, 1904, and 1909; the *Indian Medical Gazette* in 1884–5 and 1897–9; and wrote the articles on Tibet and Lhasa in the *Encyclopaedia Britannica*. He married in 1895, but his wife predeceased him, and his only son was killed in the war of 1914–18.

Fleet Surgeon ALEXANDER MARTIN FRENCH, R.N. (ret.), died in a nursing home at Surbiton on February 19, in his eighty-ninth year. He was educated at Guy's Hospital, and took the M.R.C.S. and L.S.A. in 1874. He entered the Royal Navy soon after, and attained the rank of fleet surgeon on March 28, 1899. He had been a member of the British Medical Association for fifty-five years.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Titles of the degrees of M.B., B.Chir. were conferred by diploma on I. T. Hinde of Newnham College during February.

UNIVERSITY OF LONDON

Date of Admission to Part I of the M.B., B.S.

At a meeting of the Senate held on February 22 the following decision was made as a transitional measure only:

Internal and external students who passed in anatomy and physiology at the second examination for medical degrees, Part II, held in July, 1937, shall be permitted to enter for Part I of the M.B., B.S. examination under the new regulations in November, 1939, and for Parts II and III in May, 1940, provided they have attended the courses required by the new regulations for at least twenty-seven months before entering the Part I, and for a further six months before entering for Parts II and III. It is open to these students to enter for the whole of the M.B., B.S. examination under the old regulations in May, 1940, if they so desire, provided they have attended the prescribed course of not less than thirty-three months. The courses of thirty months for Part I and thirty-six months for Parts II and III of the final examination prescribed under the new regulations are minimum courses, and accordingly students who passed the second examination for medical degrees, Part II, in July, 1938, will not be admissible to Part I of the M.B., B.S. examination until May, 1941, or to Parts II and III until November, 1941.

Duveen Travelling Studentship

The last date for the receipt of applications for the Geoffrey E. Duveen Travelling Studentship has been altered from December 31 to November 30.

UNIVERSITY OF MANCHESTER

E. H. Gillespie, M.B., Ch.B., has been appointed assistant bacteriologist in the routine section of the Department of Bacteriology.

A book prize has been offered by the chairman of Butterworth and Co. (Publishers) Ltd., and will be awarded on the results of the final examination for the degrees of M.B., Ch.B.

UNIVERSITY OF SHEFFIELD

At a meeting of the University Council, held on March 10, Professor J. Rennie was appointed representative of the University at the ninth Imperial Social Hygiene Congress in London, July 10 to 14, and Professor M. A. MacConaill representative at the seventh International Congress of Genetics at Edinburgh, August 23 to 30.

The Council received the resignation of Dr. Constance N. Jenkinson of the post of pathologist at the City General Hospital and in the University Department of Physiology, and accorded its thanks for her services to the University.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A meeting of the Council of the College was held on March 9, with the President, Mr. Hugh Lett, in the chair.

The Hallett Prize was presented to Dr. Alfred McKee Large of Toronto.

Resolutions of condolence were passed on the deaths of Mr. Graham Simpson, a Member of Council; Mr. C. H. Golding-Bird, a past Member of Council; and Mr. J. Lewin Payne, a past Examiner.

Sir James Walton was appointed Bradshaw Lecturer and Sir Walter Langdon-Brown Thomas Vicary Lecturer for the ensuing year.

Mr. Eardley Holland was reappointed as representative of the College on the Central Midwives Board.

The President reported that Mr. A. S. Kerr had been appointed to a Streatfeild Research Scholarship.

Diplomas

A Diploma of Membership was granted to Dwarkanath Bhargav Kulkarni of Bombay and the London Hospital.

Diplomas of Fellowship were granted to the following candidates:

K. D. Fraser, M. Tree, R. A. V. Lewys-Lloyd, D. W. C. Gawne, B. W. Smith, D. A. Andersen, E. C. Herten-Greaven, Winifred J. Wadge, A. M. Desmond, G. O. Jelly, H. S. Sharp, F. Braithwaite, O. M. Galal, B. J. Bickford, D. B. Fraser, D. A. Sanford, E. B. C. Hughes, M. K. Parikh, U. C. Chakraborty, F. C. Dwyer, M. K. El-Sherbini, D. W. Guthrie, E. F. Langley, J. Patrick, A. A. Shorter, R. R. Talbot.

Diplomas in Ophthalmic Medicine and Surgery were granted, jointly with the Royal College of Physicians of London, to the following candidates:

Dorothy A. Barton, M. R. Bhandari, W. L. B. Burns, F. Clifton, J. K. De Kock, I. G. de Zilva, G. D. Harthan, R. W. Hazelton, B. K. Kapur, V. N. Khanna, V. R. Koppikar, J. P. Kuruvila, W. N. Murray, K. Narayan, G. S. P. Noble, P. J. O'Shaughnessy, S. Pillai, J. D. Prasad, A.-I. Quraishi, M. Rahman, R. Rohatgi, A. M. Suhail, Z. Tahir, R. S. Varma, W. G. Watson, R. Whittaker, A. L. Young.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The Honorary Fellowship of the College is to be conferred on Professor Walter W. Chipman, M.D., F.R.C.S.Ed., F.A.C.S., F.R.C.S.Can., LL.D., Emeritus Professor of Obstetrics and Gynaecology, McGill University, Canada.

Fellowship

The following Members of the College have been elected to the Fellowship:

Waring Gerald Cosbie (Canada), George Stewart Davidson (Aberdeen), John Emmanuel Reid Heppolette (Lahore), Alison Mary Hunter (Glasgow), Thomas Norman Arthur Jeffcoate (Liverpool), Douglas Hamilton MacLeod (London), Kenneth McMillan (Birmingham), Ellen Douglas Morton (Glasgow), William Charles Wallace Nixon (London), Nilkanth Anant Purandare (Bombay), Elaine Margaret Katharine Salmond (London), William Pelton Tew (Canada), Beatrice Turner (London), Charles Henry Walsh (Liverpool).

INTER-COLLEGIATE SCHOLARSHIPS BOARD

The London Inter-Collegiate Scholarships Board announces that an examination for twelve medical scholarships and exhibitions of an aggregate total value of £1,640 will begin on May 8. They are tenable at University College and University College Hospital Medical School, King's College and King's College Hospital Medical School, the London (Royal Free Hospital) School of Medicine for Women, and St. George's Hospital Medical School. Full particulars and entry forms may be obtained from the secretary of the Board, Mr. R. B. P. Wallace, M.A., LL.B., University of London, Senate House, W.C.1.

Medical Notes in Parliament

On March 14 in the House of Lords the second reading of the Cancer Bill was moved and the debate was adjourned.

In the House of Commons this week the Navy Estimates were introduced and those for the Army and Air Force further debated. Discussion also arose on unemployment.

New Bills

On March 9 Mr. ERNEST BROWN presented a Bill entitled the Unemployment Insurance Bill, to provide, among other purposes, for the payment of contributions under the National Health Insurance Act, 1936, in respect of holiday periods. These provisions are to come into operation on October 5, 1939.

On March 13 Dr. ELLIOT presented a Local Government Superannuation Bill to amend the provisions of the Local Government Superannuation Act, 1937, and of the Local Government Superannuation (Scotland) Act, 1937, as to the local authorities to whom service must be rendered in order to constitute service for the purposes of those Acts, respectively, to amend Part II of the First Schedule to the first-mentioned Act, and to provide for the admission to the benefits of that Act of certain employees of statutory undertakers who as such employees were entitled to the benefits of the Local Government and Other Officers' Superannuation Act, 1922.

Advertisement of Cancer "Cures"

In the House of Commons on March 7 the Cancer Bill, as already amended in committee, was considered on report. On Clause 4 (Prohibition of certain advertisements) the House accepted an amendment adding members of either House of Parliament to the classes of persons to whom advertisements or circulars relating to cancer, or possible cures for cancer, might be sent without committing an offence. On the advice of Sir Terence O'Connor the House also accepted an amendment to provide that the prosecution for an offence under this clause should not be instituted in England or Wales without the consent of the Attorney-General or of the Solicitor-General.

Mr. LEACH moved to add to the exemptions under the clause:

"reports of accounts of treatment for cancer, issued or published, orally or otherwise, by registered or unregistered practitioners to persons or in publications other than those enumerated in paragraphs (*a*) and (*b*) of Subsection (4) of this Section."

He said the purpose of the amendment was to keep wide open the door of exploration in regard to cancer treatment and cure. No swindling cures for cancer appeared in the daily press at present, and the law against fraudulent remedies should be sufficient to deal with them. The clause as proposed would put a stop to exploration on the part of unregistered practitioners. A rigid application of the clause would put a ring-fence round cancer treatment, only registered practitioners being allowed inside.

Dr. PETERS said many people had cured cancer who were not practitioners. He himself had for years been ridding people of this disease. Dr. EDITH SUMMERSKILL pointed out that Dr. Peters was in fact a doctor of law, and did not approach this question from the medical angle. The profession was conscious of the debt it owed to Pasteur and others who had not been medical practitioners. Cancer, however, could not be compared with any other disease. By analysis of about 3,000 cases it was discovered that if cancer was taken in the first stage there was an excellent chance of cure, but if left until the third stage the percentage dropped to something like 10. The amendment if put into effect would be a source of danger to the community. Mr. LANSBURY considered it a mistake for the medical profession to be as dogmatic as Dr. Summerskill had been that night. Cancer had defeated the medical profession up to the present time.

Sir TERENCE O'CONNOR said that if the amendment was accepted the door would be open to exploitation of the most hideous form of suffering. As the clause stood there was no discrimination between a doctor and an unregistered practitioner. Any defence open to one was open to the other, and provided the publication was made within the accepted limits it did not matter whether the person who published the report had a medical degree or not. Before the clause came into operation the publication under consideration must be an advertisement and must either offer to treat or be calculated to lead to the use of an article. He was satisfied that in law an academic statement for the general information of the public or an inquiry as to a particular method of treatment did not come within the definition of an advertisement.

On a division Mr. Leach's amendment was defeated by 122 to 60. The report stage was concluded and the Bill was read a third time.

In the House of Lords on March 8 the Cancer Bill was read a first time and its second reading was set down for March 14.

Criminal Justice Bill: Psychological Treatment

The standing committee of the House of Commons to which the Criminal Justice Bill has been referred resumed on March 7 consideration of Clause 19 (Provision of probation orders as to mental treatment). On the motion of Sir TERENCE O'CONNOR words were added to ensure that where orders were made there should in all cases be arrangements for reception as well as for treatment. Sir Terence explained that the words would ensure an order would not be made unless the court was satisfied that there was accommodation in which the treatment could be given. By another amendment the words "treatment for his mental condition" were substituted for "mental treatment." Sir Terence O'Connor said that this was done to avoid undue stress on the word "mental."

The clause as amended was approved.

On Clause 25 (Amendment of provisions of probation order as to mental treatment) Sir TERENCE O'CONNOR moved a series of amendments to express its purpose in simpler and more comprehensive language. These were accepted.

Examination of the Bill continued on March 9.

Recruitment of Nurses

The Health and Housing Committee of the Conservative and National M.P.s met at the House of Commons on March 8 to discuss the interim report of the Departmental Committee on Nursing Services. The discussion was opened by Mr. H. S. SOUTTAR, surgeon to the London Hospital, and Professor R. M. F. PICKEN of Cardiff, who agreed that the needs of voluntary and municipal hospitals required the recruitment of at least 20,000 nurses yearly. They suggested that if conditions of service, salaries, and pensions compared more favourably with the prospects in other professional occupations for women the present shortage of entrants would soon be overcome. But without State aid they believed it would be impossible for the voluntary hospitals to offer adequate salaries and shorter hours of employment.

This interim report will be the subject of a motion by Sir Francis Fremantle when the Speaker is moved out of the chair on the House going into committee on the Civil Estimates.

Fitness for Flying: Committee of Investigation

Introducing the Air Estimates on March 9, Sir KINGSLEY WOOD said he had taken steps to appoint a committee to investigate and advise him on the medical aspects which might affect security and efficiency in flying. Sir Edward Mellanby would be chairman of this committee, which would be composed of a number of eminent scientists and medical men, with two representatives of the Royal Air Force Medical Service. [The membership of the committee will be found at page 592.] To meet the cases of candidates technically suitable for the Air Force but not medically so there had been a lowering of standards. Men were now expected to reach standards known as "Fit, Grade II, General Service," or "Fit, Grade II, Home Service."

Nottingham Hospitals Inquiry

In a reply on March 13 to Mr. A. M. Lyons, Mr. BERNAYS said that an investigation into conditions at the Nottingham Isolation Hospital and the Nottingham Institution had been carried out by a general inspector of the Ministry of Health with the assistance of a nurse inspector. Dr. Elliot had considered the inspector's report carefully. No evidence of any kind of infestation of beds, etc., was discovered, though it seemed accurate that cockroaches were to be found in the City Institution and to a certain extent in the Isolation Hospital. Nottingham Corporation took steps to deal with these pests.

On the same date Mr. LYONS asked how many patients had been received in the Nottingham Isolation Hospital suffering, or thought to be suffering, from some form of enteric fever during the present outbreak there. Mr. BERNAYS said he was informed by the local authority that up to the present thirty-one such patients had been admitted to the hospital.

Further answering Mr. Lyons on March 13, Mr. BERNAYS said general inspectors of the Ministry of Health had power to visit and inspect any public assistance institution at any time. This power did not extend to hospitals and other institutions provided by local authorities under the Public Health Acts. It was the duty of the general inspector to keep himself acquainted with the conditions in the public assistance institutions in his district. For this purpose visits of inspection were paid from time to time. The general inspector stationed at Nottingham had not visited the Nottingham Institution during the last six months, during which time there had been heavy pressure on the officers of the Department in connexion with civil defence emergency schemes. Several visits had been paid during the last two or three years.

Pulmonary Disease in Coal-miners

Mr. TOM SMITH asked on March 13 whether the Home Secretary was aware that coal-miners were subject to chronic pulmonary disease of a disabling nature which did not come within the accepted definition of silicosis; and whether the inclusion of this disease in the schedule of industrial diseases for the purpose of workmen's compensation was contemplated. Mr. GEOFFREY LLOYD replied that the Industrial Pulmonary Diseases Committee of the Medical Research Council, which was investigating the problem, had not yet reported that there was a specific pulmonary disease other than silicosis which could be distinguished as due to employment in coal mines and made the subject of a right to compensation under the Workmen's Compensation Act. Until the existence of such a specific disease was established Sir Samuel Hoare was not in a position to propose an extension of the Act in the direction suggested.

Medical Personnel in African Dependencies.—Answering an inquiry about Kenya on March 8, Mr. MALCOLM MACDONALD said that under present economic conditions it was out of the question for the Government of Kenya or of any other African dependency to provide all the trained medical staff that could usefully be employed, nor did he foresee any possibility of meeting requirements till the African himself had been trained to carry out these services among his own people. He hoped Makerere College would help considerably to provide this trained African personnel.

Diphtheria Immunization.—A memorandum on the production of artificial immunity against diphtheria was issued to medical officers of health in 1933, and is at present being revised with a view to its reissue. Dr. ELLIOT stated in the House of Commons on March 9 that he was having such diphtheria records as were available for European countries examined with a view to ascertaining what light they gave on the value of artificial immunization.

Radium in Cornwall.—Captain CROOKSHANK states that the pitchblende deposits of Cornwall had been worked out or contain such low-grade ores that they do not justify processing for recovery of radium.

Medical News

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, March 23, at 8.30 p.m., when Dr. Gerald Slot, Colonel Parkes, and Captain G. M. Eden will present a paper on "The Street Accident."

A meeting of the Association of Industrial Medical Officers will be held at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., on Friday, March 24, at 6 p.m., when Sir Owen Williams and Colonel A. W. Garrett (H.M. Deputy Chief Inspector of Factories) will speak on "Factory Construction and Health." A business meeting will be held at 5.30 p.m.

The eighteenth annual dinner of the Society of Radiographers will be held at the Criterion Restaurant, Piccadilly Circus, W., on Saturday, March 25, at 6.30 for 7 p.m.

In our advertisement columns this week the University of Hong Kong invites applications for the chair of pathology.

The third International Neurological Congress will be held in Copenhagen this year, when the following subjects will be discussed: (1) hereditary nervous diseases, (2) the autonomic nervous system and endocrinology, (3) avitaminosis.

A congress of colonial medicine will be held at Algiers on March 29 and 30 under the presidency of Dr. Ciavaldini, when the subjects for discussion will be the prophylaxis and treatment of malaria, and synthetic drugs. The arrangements are in the hands of Dr. Lartigne, Santé Publique, Gouvernement Général, Algiers.

The Dutch Congress of Natural Science and Medicine will be held at Nymwegen, under the presidency of Professor G. Holst, from April 11 to 13. Further information can be obtained from the general secretary, Dr. D. Coelingh, Regentesselaan 2, Bussum, Holland.

The L.C.C. Assistant Medical Officers' Committee of the Metropolitan Counties Branch of the British Medical Association has arranged a meeting to be held at B.M.A. House, Tavistock Square, W.C., on Friday, March 24, at 8.30 p.m., when a discussion on "The Treatment of Fractures of the Neck of the Femur" will be opened by Mr. W. C. Gissane, followed by Dr. A. Kerr Boyle and Mr. E. T. Bailey. The meeting is open to all medical officers of the London County Council.

At its meeting on January 20 the Bureau of the Health Committee of the League of Nations was informed of the imminent departure of Dr. L. W. Rajchman, Director of the Health Section since its inception in 1921. The President of the Bureau paid a tribute to Dr. Rajchman, who had been the driving force behind the Health Organization for eighteen years and had worked with great ability and enthusiasm and with unremitting energy for the success of an undertaking which he had very much at heart. Dr. Rajchman having left on January 31, Dr. R. Gautier has been placed temporarily in charge of the Section.

The January–March issue of *Archives de Medicina Infantil* is devoted to sulphanilamide.

Westminster Hospital has received news that King Edward's Hospital Fund is prepared to make a special grant of £15,000 towards the £100,000 required to open the hospital free of debt on condition that the balance is raised by April 20, the day when the King, accompanied by the Queen, will open the hospital.

On the occasion of the forthcoming celebration in April of the fiftieth anniversary of its foundation the Belgian Society of Gynaecology and Obstetrics has been granted the title of Royal Society by the King of the Belgians, who has also consented to become its patron.

Elected as officers of the French Academy of Surgery for 1939 are: Drs. Grégoire, president; Mocquot, vice-president; Robert Monod and Rouhier, secretaries; René Toupet, treasurer; and A. Basset, in charge of the archives.

No. 9

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 4, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns (125 in 1938) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)					1930-38 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	50	10	11	2	1	50	7	10	1	2		
Deaths		—	1				1	2				
Diphtheria	1,110	96	199	60	16	1,556	172	289	75	38	1,198	164
Deaths	26	7	6	3	1	50	8	7	4	—		
Dysentery	42	6	18	1	—	155	44	73		—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute	5	—	—		—	3	—	1		—		
Deaths		1					2					
Enteric (typhoid and paratyphoid) fever	18	1	4	3	—	16	1	1	5	2	29	
Deaths	1	—	—	—	—	—	—	1	—	—		
Erysipelas			72	6	6			81	7	8		
Deaths		—					1					
Infective enteritis or diarrhoea under 2 years												
Deaths	43	13	9	7	1	56	19	5	9	1		
Measles		32	47		3			1,747		237		
Deaths	4	—	—	1	—	44	14	21	1	13		
Ophthalmia neonatorum	84	11	34		—	118	13	41		—		
Deaths												
Pneumonia, influenzal*	1,541	200	37	12	9	1,294	107	8	8	9	1,532	141
Deaths (from influenza)	284	69	18	7	4	57	6	4	1	1		
Pneumonia, primary			174	19				280	13			
Deaths		28		11	8		19		32	22		
Polio-encephalitis, acute	1	—				1	—					
Deaths		—					—					
Poliomyelitis, acute	6	1	4	1	—	6	1	—		—		
Deaths		2					—					
Puerperal fever	1†	1	13	2	—	5†	5	23	2	2		
Deaths		—					—					
Puerperal pyrexia	220	26	35		1	188	19	30		2		
Deaths												
Relapsing fever	—	—			—	—	—			—		
Deaths												
Scarlet fever	1,656	142	301	76	55	2,367	182	472	111	97	2,364	219
Deaths	1	—	—	—	1	8	—	1	—	1		
Small-pox	—	—	—		—	2	—	—		—		
Deaths	—	—		—	—	—	—		—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths				—	—				—	—		
Whooping-cough		268	475		242			80		16		
Deaths	19	2	11	1	2	26	2	1	1	2		
Deaths (0–1 year)	416	73	87	26	16	420	70	79	53	27		
Infant mortality rate (per 1,000 live births)	64	61				70	58					
Deaths (excluding stillbirths)	6,152	1,342	669	217	163	5,449	1,108	791	253	167		
Annual death rate (per 1,000 persons living)	15.1	17.1	13.5	14.6	14.4	13.4	14.0	14.4	17.1	14.8		
Live births	6,221	1,005	909	383	217	6,823	1,249	925	389	253		
Annual rate per 1,000 persons living	15.3	12.8	18.4	25.7	19.2	16.8	15.7	18.9	26.3	22.4		
Stillbirths	249	42	38			267	28					
Rate per 1,000 total births (including stillborn)	38	40	40			38	22					

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† After October 1, 1937, puerperal fever was made notifiable only in the administrative county of London.

EPIDEMIOLOGICAL NOTES

Typhoid Fever

Of the 18 cases of typhoid fever notified during the week under review 16 belonged to the Nottingham outbreak, referred to in these columns last week, in which there have been 26 confirmed cases, with 2 deaths, to date.

Influenza

Reports indicate that there is a decline in the incidence of influenza in Ireland, Scotland, the Netherlands, Denmark, Germany, Switzerland, and Hungary, as well as in certain areas of England and Wales. During the week ended March 4, notifications of pneumonia (influenzal and primary) fell from 1,616 to 1,541 in England and Wales, but rose from 178 to 200 in London; the deaths in the great towns, including London, were almost the same for both weeks. The towns with the greatest number of deaths were: Greater London 152, London Administrative County 69, Bristol 8, Nottingham 7, and 6 each in Manchester, Sheffield, Birmingham, and Rhondda Urban District. In Scotland notifications fell from 40 to 37 and deaths from 34 to 18.

In Germany reports indicate that during the week ended February 25 influenza declined in most of the great towns, including Berlin, Bremen, Breslau, Dortmund, Frankfort-on-Main, Hamburg, Leipzig, Mannheim, and Munich. In the same week in Switzerland 6,134 cases were reported in twenty cantons, compared with 11,562 cases in twenty-one cantons in the previous week. Deaths in the ten great towns were 59 in the week ended February 18 and 76 in the previous week. In the U.S.A. there are reports of localized epidemics of mild types of respiratory infection, but it does not appear that influenza has spread throughout the country. In the first four weeks of January 12,765 cases were reported, compared with 11,628 cases for the corresponding period of last year. Deaths ascribed to pneumonia in the great towns (population approximately 33 million) number 762 for the week ended February 4; this is 230 less than the average for the same week of the previous five years

Returns of Births and Deaths for the Fourth Quarter of 1938

According to the Registrar-General's quarterly returns for the period ended December 31, 1938, 143,849 live births were registered in England and Wales, 1,064 more than were registered in the corresponding quarter of 1937, representing an annual rate of 13.8 per thousand of the estimated mid-year population for 1938. Of the total number 5,831 were illegitimate, 318 more than in the fourth quarter of 1937. 119,222 deaths were registered, 6,620 more than in the preceding quarter, but 7,810 less than in the corresponding quarter of 1937—giving an annual rate of 11.5 per thousand of the population, or 0.8 below that recorded during the fourth quarter of 1937. The infant mortality rate was 52 per thousand registered live births, or 11 below the average for the ten preceding fourth quarters. The highest death rates per thousand live births from diarrhoea and enteritis among children under 2 years of age were in Middlesbrough 28.3, Sunderland 24.5, Keighley 18.2, Birkenhead 16.9, Edmonton 16.4, and Dagenham 16.3.

In Scotland in the quarter under review 20,951 births were registered, 466 fewer than in the preceding quarter, while the rate was 16.7 per thousand population, or 0.3 below the preceding quarter. The number of births is 53 less than the average for the last five years, and the rate is 0.1 per thousand population below the average for this quarter. The proportion of illegitimate births, 5.7 per cent., is 0.6 below that for the previous quarter and 0.8 below the five years' average for this quarter of the year. There were 16,094 deaths, or 2,209 more than in the previous quarter—giving a death rate of 12.8 per thousand population, or 1.8 more than in the previous quarter and 0.5 lower than the last five years' average. There were 1,576 deaths among children under 1 year, equivalent to an infant mortality rate of 75 per thousand live births, the lowest for the fourth quarter of any year since 1919. Among illegitimate children the mortality was 72 per thousand live births, and the figure was 122. Infant mortality was highest in Arbroath 148, Airdrie 139, Kilmarnock 115.

In Northern Ireland during the fourth quarter of 1938, 6,040 births were registered, being equivalent to an annual rate of 18.8 per thousand population, and 0.9 above that for the corresponding quarter of 1937. Illegitimate births numbered 270, or 4.5 per cent. of the total live births registered during the quarter. Deaths were 4,416, equivalent to an annual rate of 13.7 per thousand population; this rate is 0.1 above the rate for the corresponding quarter of 1937, and above the average rate for the fourth quarters of the ten years 1928–37. 436 infants under 1 year were registered, equivalent to a rate of 72 per thousand births registered, compared with a rate of 84 for the corresponding quarter of the previous year and an average rate of 75 for the corresponding quarters of the five preceding years. There were 54 deaths from diarrhoea and enteritis in children under 2 years of age, compared with an average of 67 for the last quarters of the period 1933–7.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS.—All communications should be addressed to the Advertisement Manager (office hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are

EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*

SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the office of the Cumann Doctúirí na h-Éireann (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin.)

QUERIES AND ANSWERS

A Result of Circumcision

"H. C. M." writes: I have read with interest Mr. Kenneth Walker's recent article on circumcision, and the correspondence which has arisen on this subject. I am now wondering whether anyone has had experience of a case similar to the one described below, and can therefore give me advice with regard to treatment. The patient is a schoolboy aged 10, who suffers from nocturnal enuresis. He is the second child in a family of three, and is the only one to be handicapped in this way. In all other respects the boy is normal. He attends a boarding school, where he says he is quite happy, and his attainments in work and games seem to be about average. He has been seen from time to time by several different doctors and various treatments have been tried, including the removal of tonsils and adenoids five years ago, and more recently the method described by Dr. H. G. McGregor (*Journal*, May 22, 1937). None of these treatments has produced any improvement. On examination the boy was normally developed for his age, and there was no physical abnormality except in the penis itself. Here a circumcision had been performed (as an infant), and the mucous membrane of the prepuce had apparently not been fully separated from the glans as far back as the coronal sulcus. The result is that now the skin of the shaft of the penis is continuous with the glans in the greater part of the circumference, the coronal sulcus

being buried. At about six points there are what appear like shallow crypts from which smegma is discharged. These are actually places where the coronal sulcus is exposed. In the rest of the circumference it can be palpated under the skin. There was no evidence of inflammation. The urine was normal. The point on which I ask advice is whether this condition is likely to be the cause of the enuresis, and if so whether a cure is likely to result from some plastic operation. I also wondered whether in any case something ought to be done on account of the likelihood of one of the crypts becoming infected, and whether an operation in this area might produce a psychological cure even if the local condition is not the true cause of the malady. I should be glad to hear if any of your readers know of a case which has been cured by correction of a similar local condition.

Raynaud's Disease

Dr. H. J. KINGSLEY (London, E.C.1) writes: In reply to Dr. F. O. Taylor's inquiry (March 11, p. 546), might I suggest short-wave therapy as a form of treatment for Raynaud's disease. The electrodes should be applied in the lower cervical region, so that the inferior cervical ganglion is irradiated. Non-specific foreign protein therapy (such as typhoid vaccine intravenously) has proved beneficial in certain vasomotor disorders, and this might be usefully employed in Raynaud's disease. The hands and arms should be heated before the protein is given. This form of treatment is contraindicated if there is evidence of arteriosclerosis.

Cheiropompholyx

Dr. J. FAIREY (Isle of Wight), in reply to "A.B.C." (February 25, p. 430), writes: I suggest he tries dressing with tinct. benzoini co., and when this has dried apply "nivea" cream. If the condition is irritating 1 drachm of tannic acid may be added to the ounce of friars' balsam. Perhaps "A.B.C." will let me know if this treatment is successful.

Income Tax

Private Motoring Expenses

"F. R." explains that last year for the first time he was refused a deduction for the total amount of his motoring expenses—£5 was disallowed as representing private use. Is this correct?

*** The expenses deductable are those incurred wholly and exclusively in the carrying out of professional work. Where a car is used partly—even though only to a small extent—for private purposes the whole of the expenses cannot be regarded as within the authorized deduction. Frequently the total amount is divided in the ratio of the respective mileages on a reasonable estimate, and it is thought that that basis would be supported on appeal to the Commissioners or High Court.

LETTERS, NOTES, ETC.

Normal Temperature 99°?

Dr. D. GORDON EVANS (Surrey) writes: With reference to Dr. Edward Bevan's letter in the *Journal* of February 25 (p. 414), I have come across a similar case in which the normal temperature appeared to be between 99° and 100° F., but this was in a case of healing tuberculosis. We should remember the dictum that in the British Isles in a case of pyrexia without physical signs lasting for a week the case is one of typhoid, tuberculosis, or sepsis; in a similar case lasting for a month the diagnosis rests between typhoid fever and tuberculosis; if the condition lasts for three months the condition is always tuberculosis. Possibly further investigations might help in the elucidation of the cause of this condition, such as the Koch's old tuberculin test or the cutaneous tuberculin reaction, though the latter is of doubtful value above the age of 5 years. A complete blood count and the examination of the stools for tubercle bacilli might also help. The pulse rate of 80 appears to be moderately high. I do not agree that the only possible conclusion is that her normal temperature is 99.6° F., and I am convinced that this low fever is pathological. In the Tropics amoebiasis might have to be excluded, but in this country with a history of so many recent acute infections and the lowering of resistance which appears to have been the probable result, I should suspect chronic tuberculosis, possibly of the bronchial or abdominal glands. I am not suggesting that any alteration in the treatment would be necessary, however.

Social Aspects of Abortion

At a meeting in London of the Medical Group of the Left Book Club on March 1 Mr. Aleck Bourne gave an address on "Some Social Aspects of Abortion," a subject he had discussed on rather different lines before the Edinburgh Obstetrical Society (*British Medical Journal*, February 25, 1939, p. 408). Having outlined briefly the history of abortion Mr. Bourne analysed the causes for which women desired it. There were first the purely medical grounds, such as tuberculosis. Then there were the large number of women who had had several children in rapid succession and who, in consequence, were exhausted, anaemic, and "atonic." Others desired abortion because of economic difficulties. Unemployment, insecurity, and the fear of war added their quota. In the unmarried mother the fear of social ostracism was the chief factor and, although the attitude of society towards her showed a marked change, there was still much room for improvement. There was also a limited group of richer women who objected to motherhood because it would curtail their social amenities. The attitude of the States to abortion varied. In Italy and Germany the Governments wished to increase the population and so support a demand for expansion; the laws against abortion were therefore strict. In the U.S.S.R. the greatly improved economic status had reduced the necessity for abortion; leave from work with pay before and after delivery, crèches, and free education all helped to make motherhood attractive. In Britain the falling birth rate would lead to a further reduction in demands for goods under a capitalist system. Mr. Bourne favoured abortion where it was necessary for economic or health reasons, but said that he pointed out to the "selfish" group the joys of motherhood. At present most abortions were performed by persons whose ends were purely commercial, and resulted in one-third of all the morbidity under the heading of "childbirth." This could only be ended by legalization of abortion by doctors after due consultation. Abortion would become largely unnecessary in a socialized State with adequate wages, stability, social services, education, and an improvement in the position of women. A lively discussion followed, which stressed the social and economic implications of the subject as more important than the purely medical.

The Pill at Bed-time

Dr. C. W. M. WHITTY (London, S.E.) writes: In the *Journal* of February 25 (p. 405) you quote Dr. C. E. Lakin in a discussion at a meeting of the Medical Society of London as finding it curious that the retiring hour should be chosen for taking a pill, as peristalsis would be most quiet during sleep. Surely the evidence is in favour of Professor Cannon's view of sleep as a largely "parasympathetic state" in which peristalsis and gastro-intestinal absorption proceed actively. If this be so, a traditional procedure in medicine is afforded a rational basis; and the argument might be extended to approve the practice—even if at times involuntary—of a post-prandial nap.

William B. Wherry : Bacteriologist

Martin Fischer, professor of physiology and a colleague at Cincinnati, has brought out—obviously a labour of love—a memoir of William Buchanan Wherry, born as the son of a missionary in the Punjab in 1874, educated medically at Rush Medical College, Chicago, and a hard-working bacteriologist and teacher until his death in 1936. After working in Chicago in bacteriological laboratories he held various appointments—for example, at Manila—until in 1909 he settled down permanently in a bacteriological chair at Cincinnati. Although full justice to his work—for example, on plague, tularaemia, and allergy—is shown, and a bibliography of eighty-two items given, the most appealing feature is the fine character of the man and the teacher, which is mainly told by his correspondence with his numerous friends. It is not the first time that Martin Fischer has paid an affectionate tribute to colleagues who have passed beyond these voices. The memoir is published in the United States by Charles C. Thomas, but no price is mentioned.

Disclaimer

Mr. A. MCKIE REID, F.R.C.S., writes: My name has been mentioned in a certain section of the Press in connexion with the treatment of an eye disease; the publication of any particulars relating to me was made without my knowledge, authority, or approval.